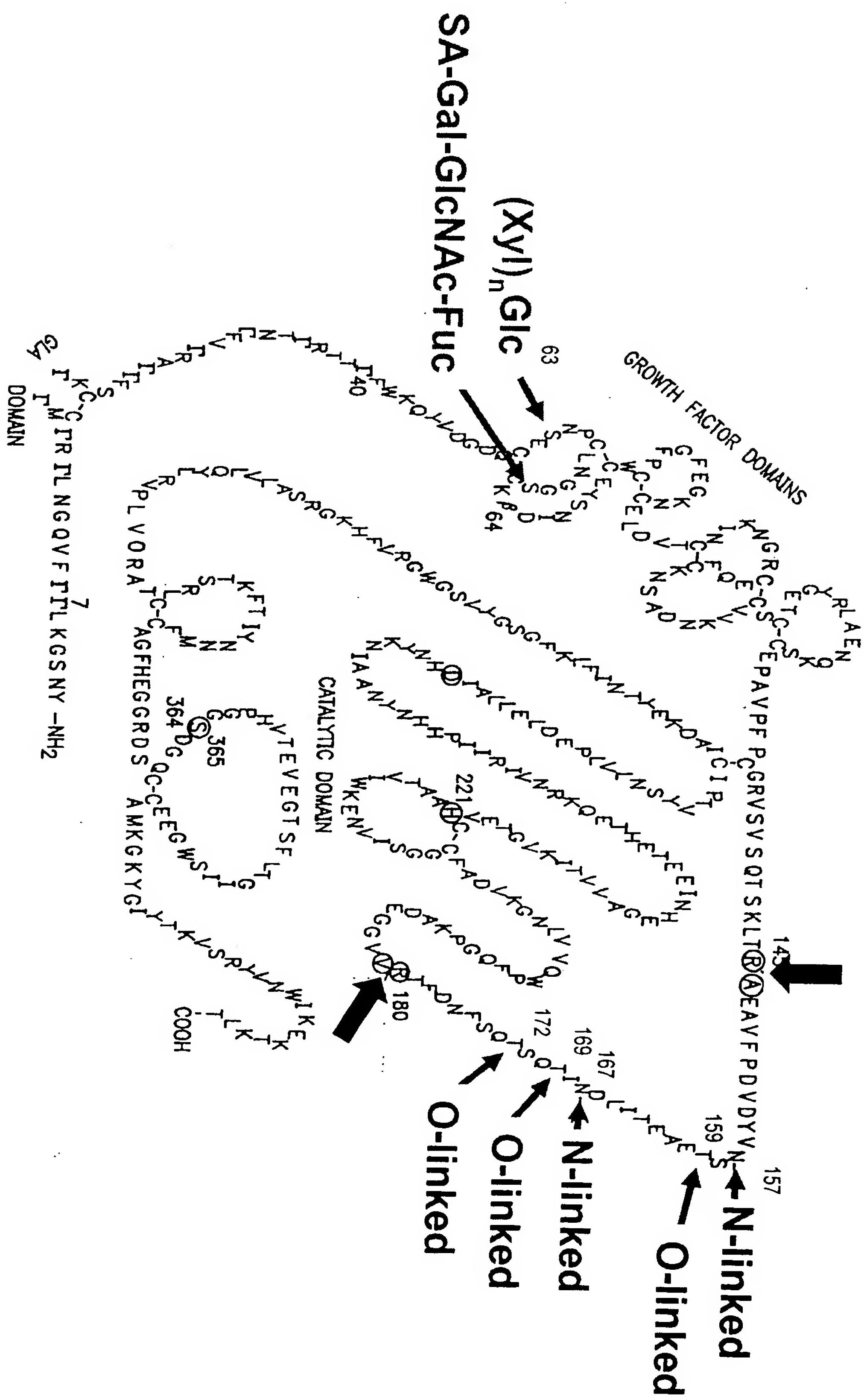
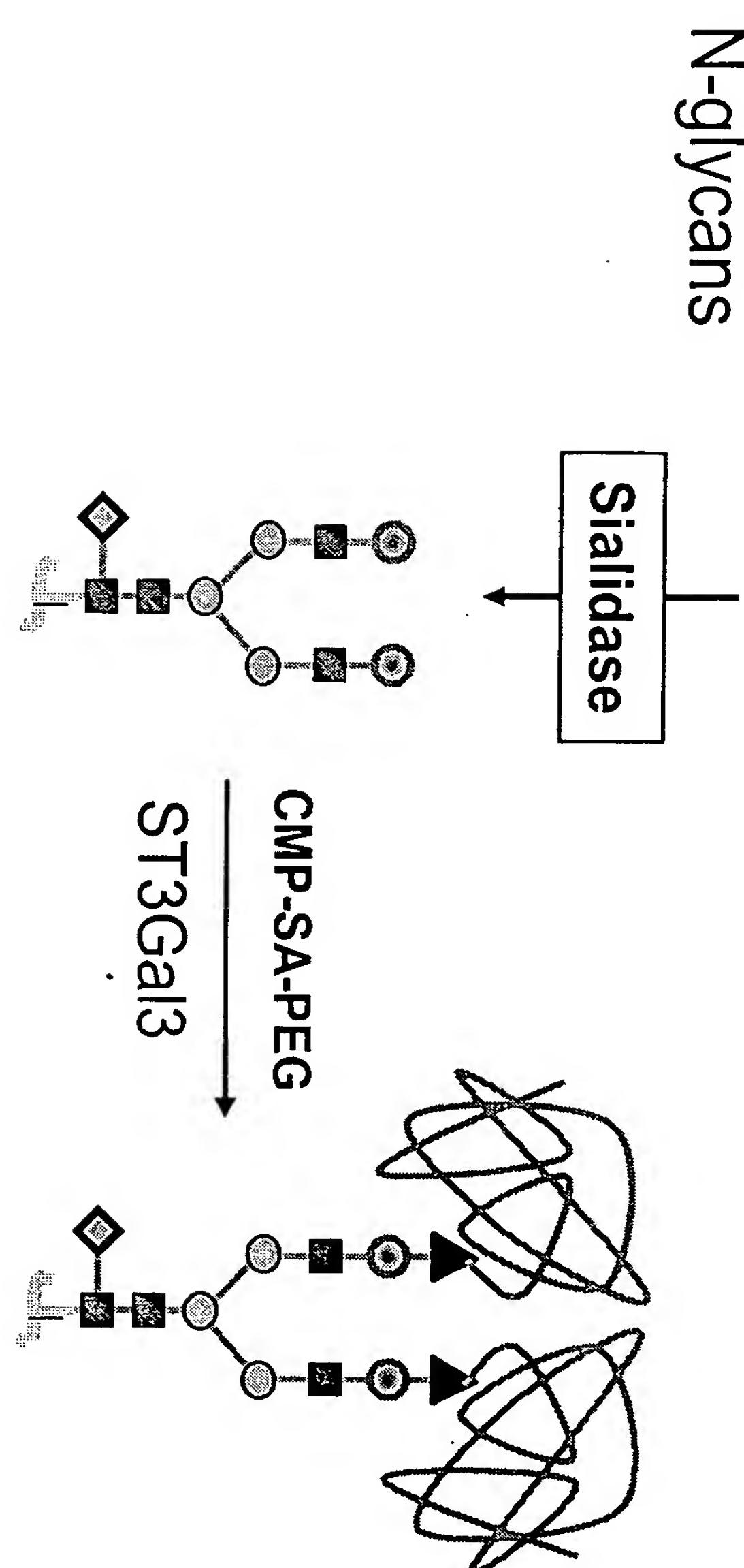


FIGURE 1



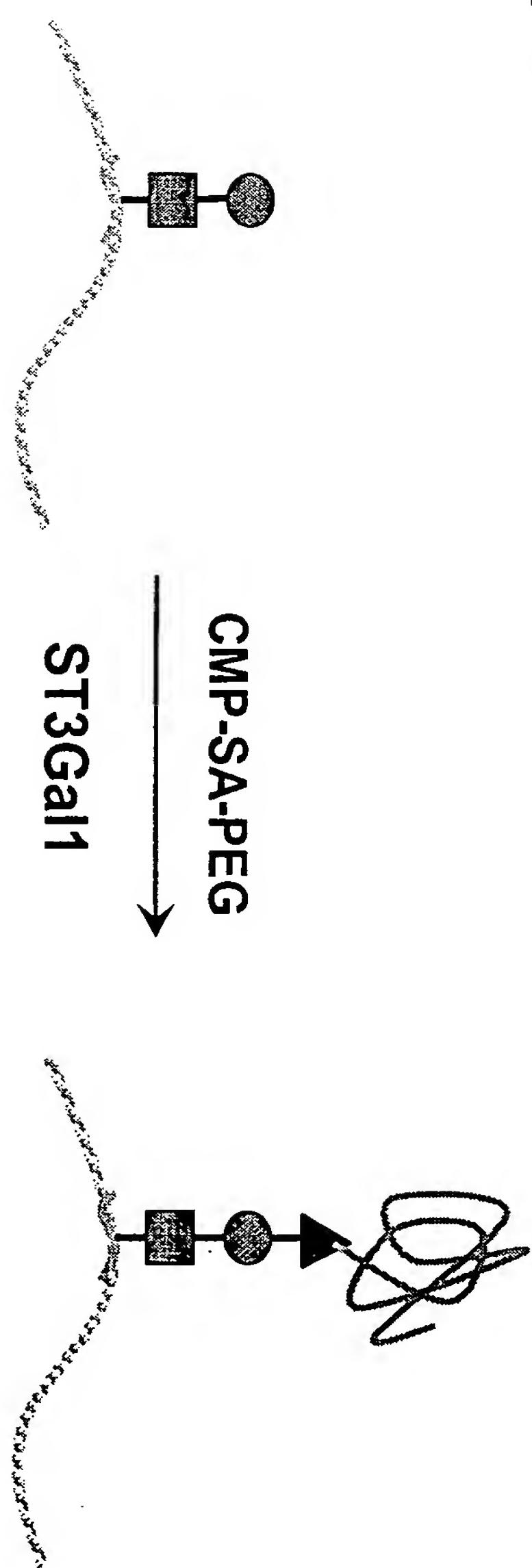
**FIGURE 2A**

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**FIGURE 2B**

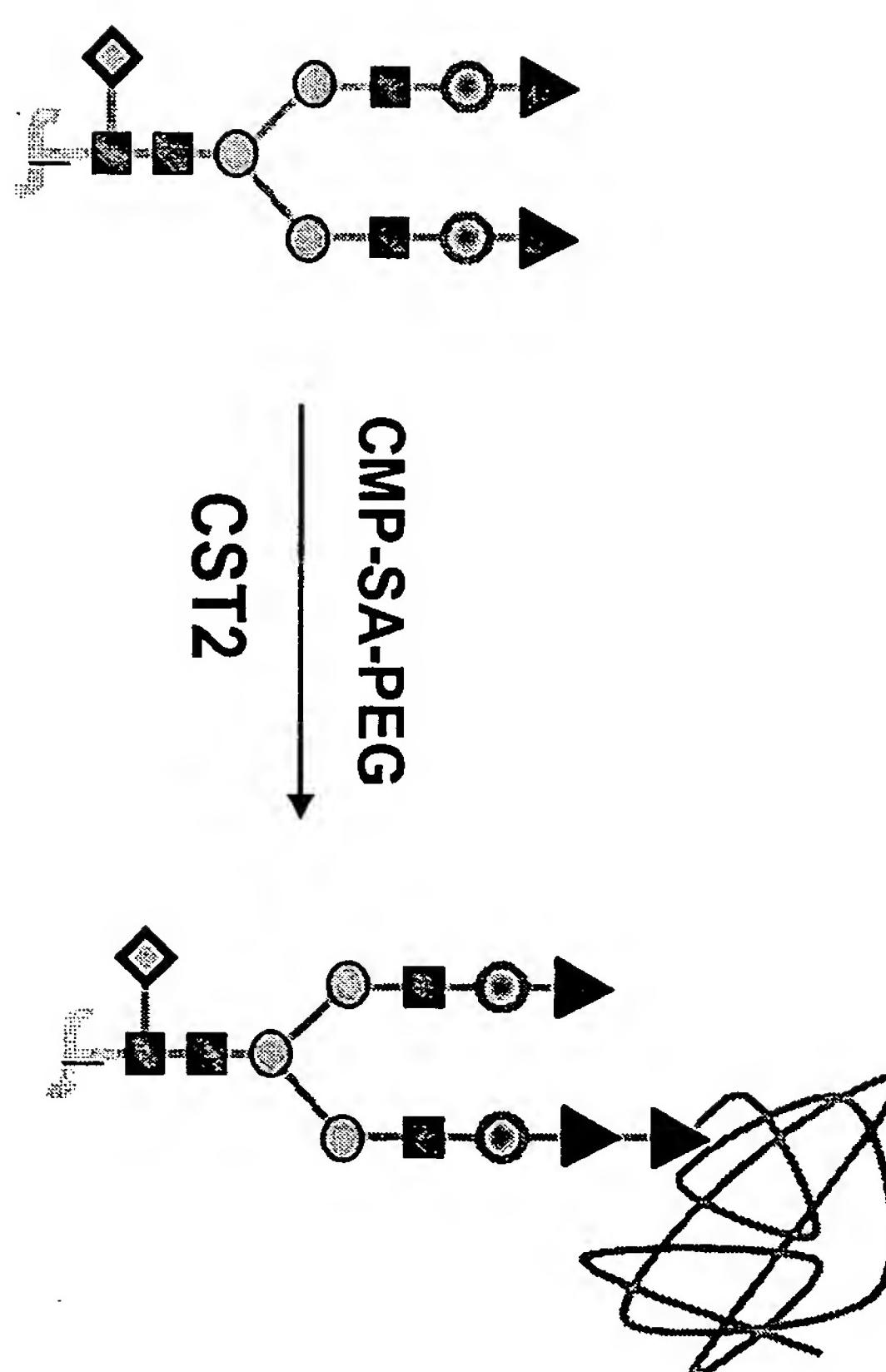
BEST AVAILABLE COPY

O-glycans

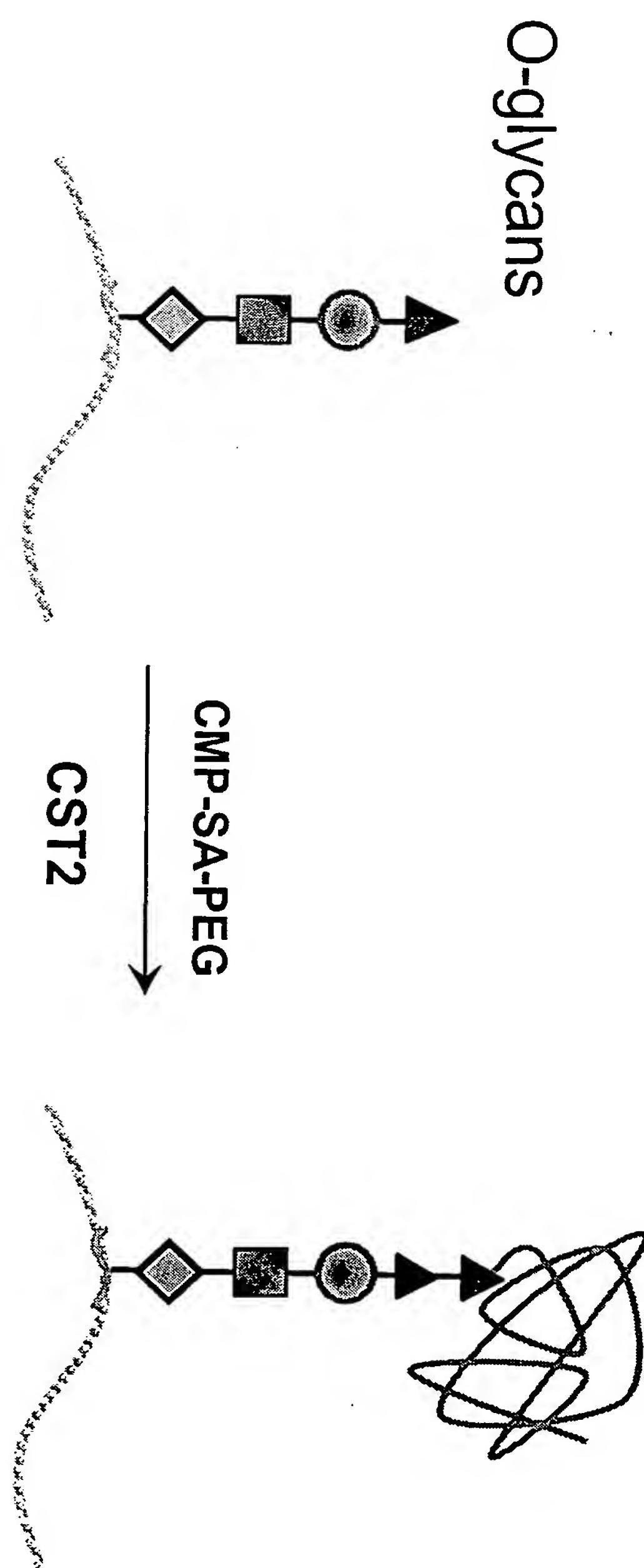


**FIGURE 2C**

N-glycans



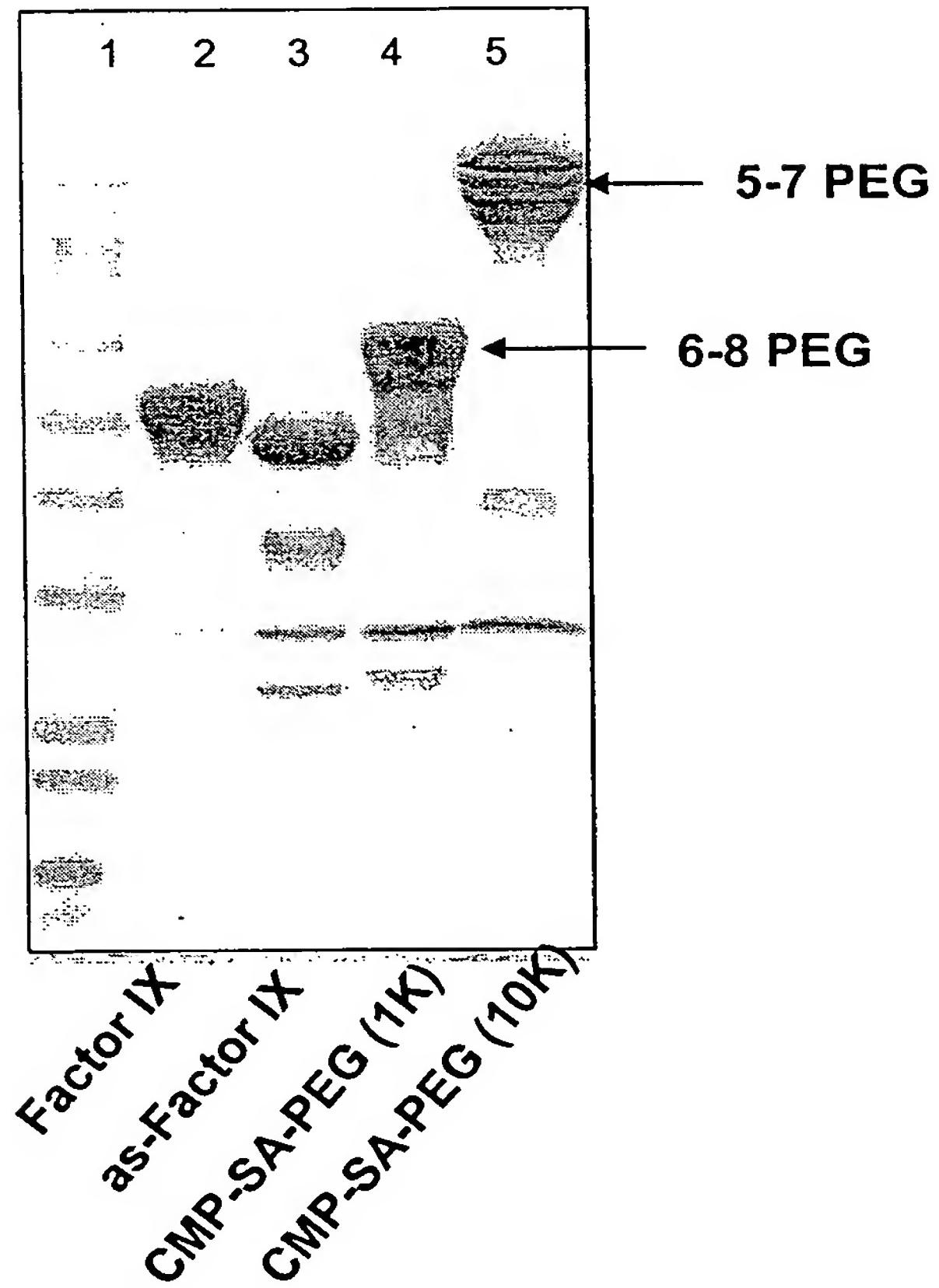
BEST AVAILABLE COPY

**FIGURE 2D**

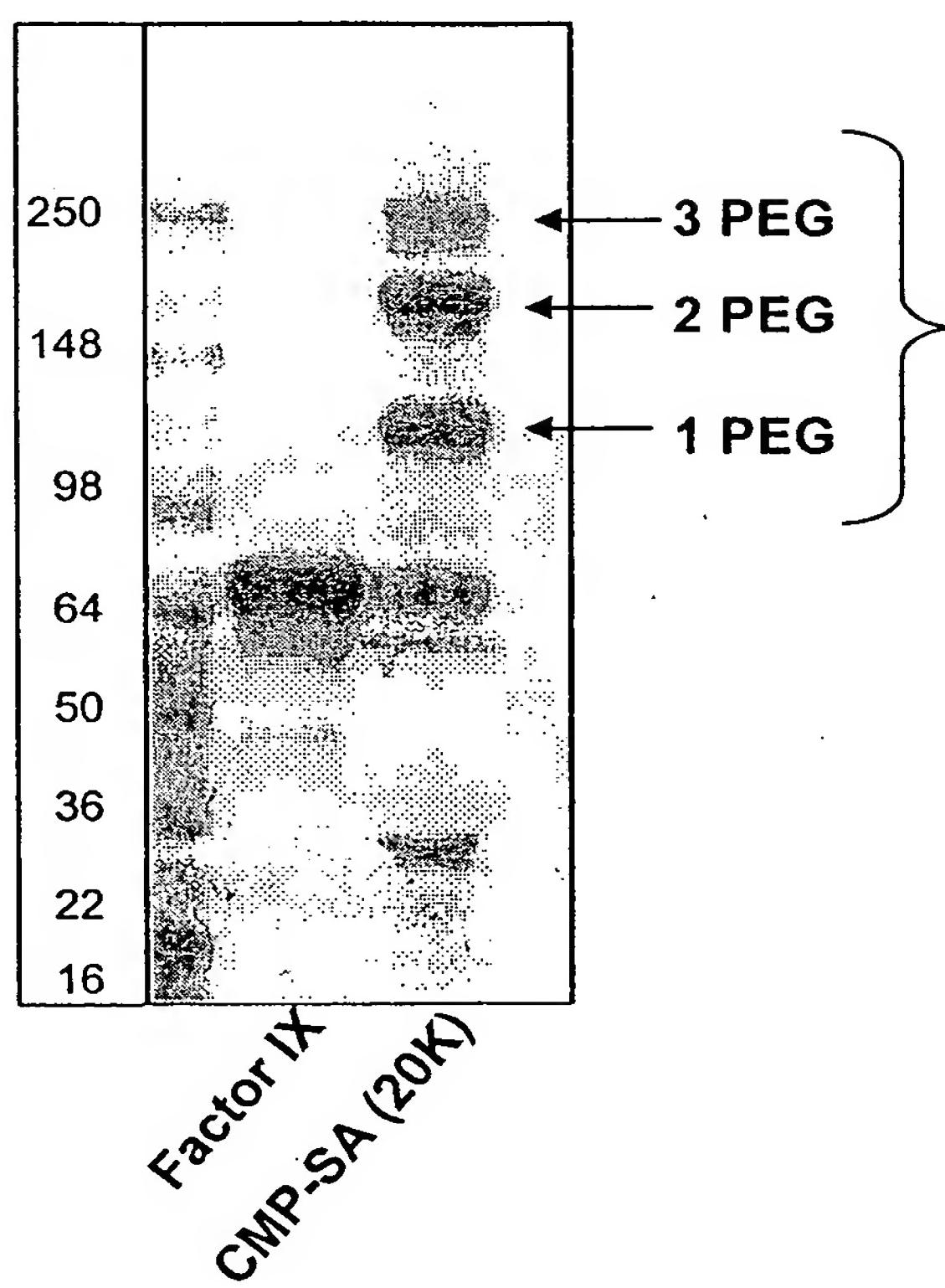
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**FIGURE 2E**

**Sialidase, ST3Gal3  
Reaction with CMP-  
SA-PEG (10 KDa)**  
**4-20% SDS-PAGE gels**



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**FIGURE 2F****CST-II Reaction with  
CMP-SA-PEG (20 KDa)****4-12% SDS-PAGE gels****BEST AVAILABLE COPY**

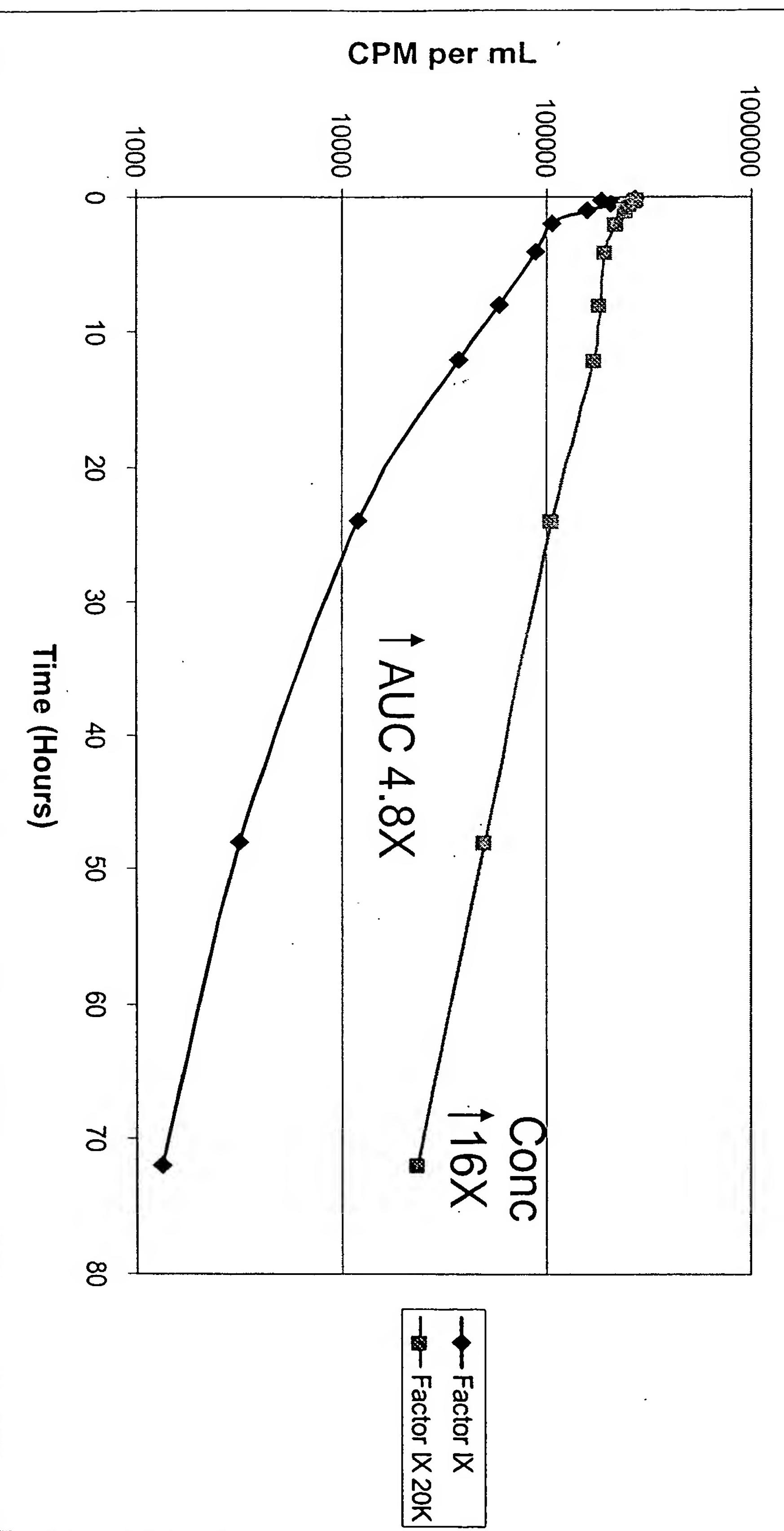
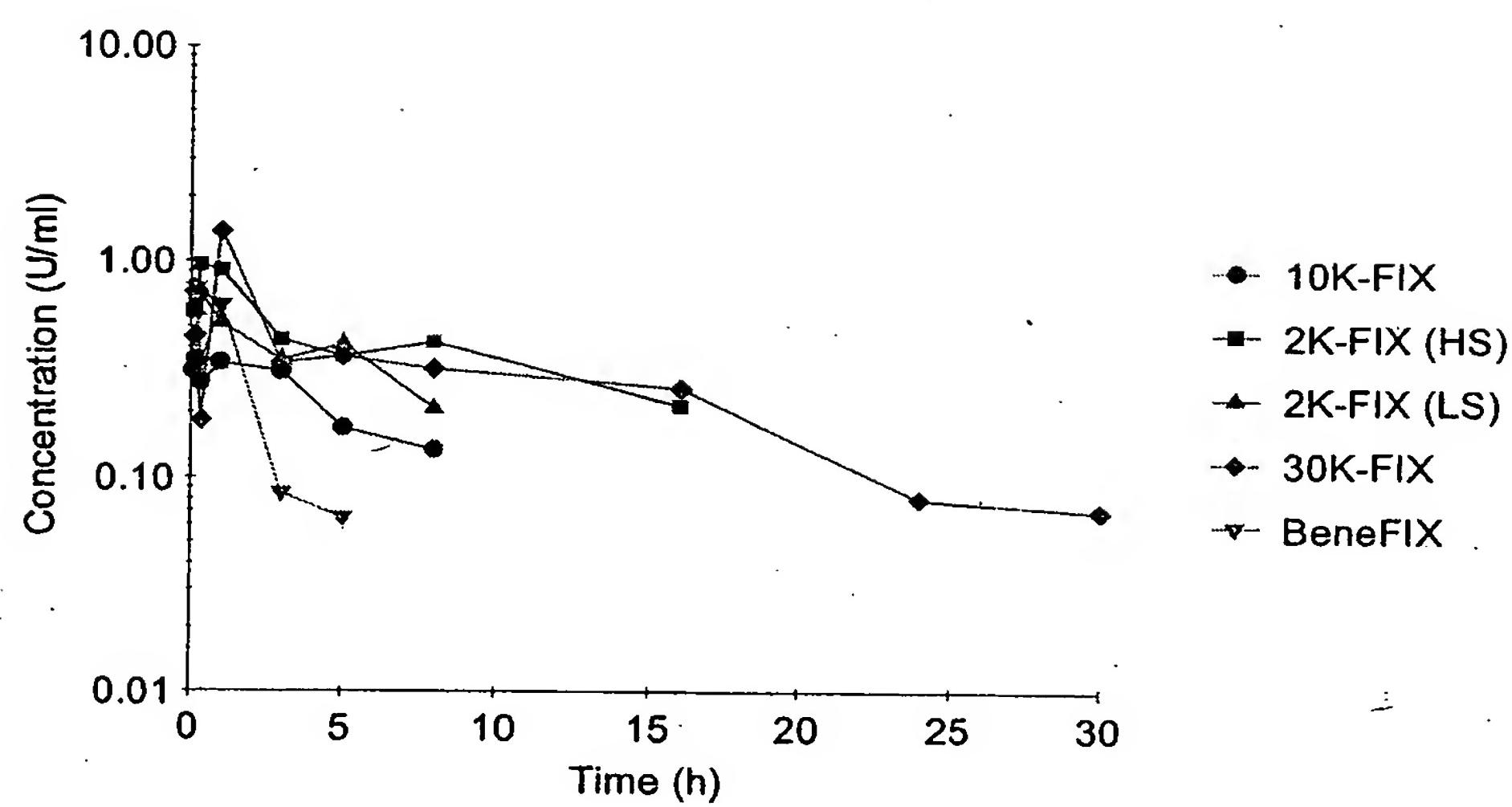
**FIGURE 3**

FIGURE 4

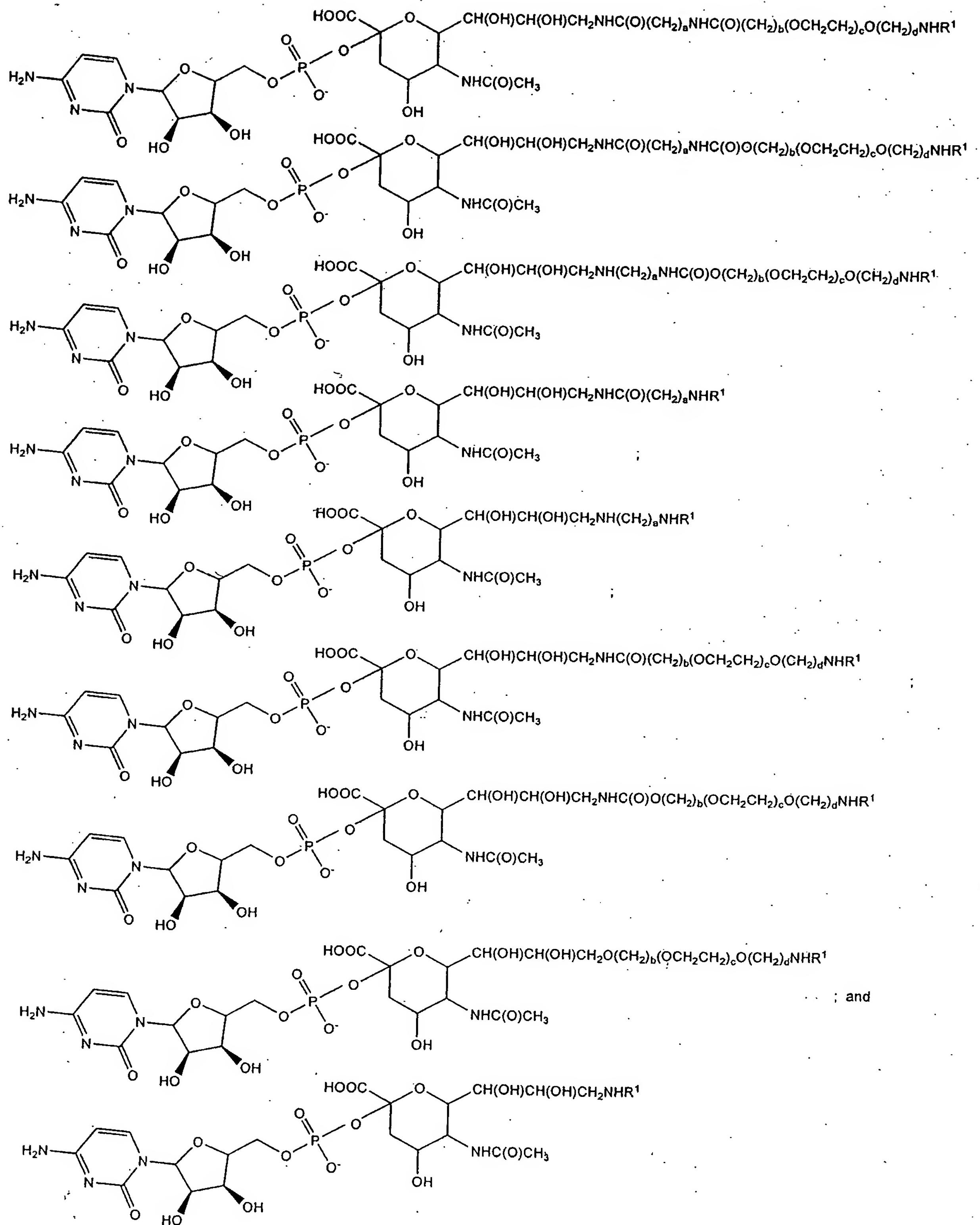
| Enzyme                     | Specificity and Linkage | Reaction Conditions                          | PEG Incorporation (size)                        | Clotting Activity (Chromogenic Assay)            |
|----------------------------|-------------------------|--|---|--|
| Factor IX (unmodified)     | NA                      | NA   | >90% sialylation                                | 110-139%   |
| ST3Gal3                    | N-linked glycans        | CMP-SA                                       | None.<br>(incorporated 2-3% SA)                 | Full Activity                                    |
| ST3Gal3                    | <i>N-linked glycans</i> | 1. Sialidase<br>2. CMP-SA-PEG<br>(1 & 10KDa) | (1 K); 6-8 PEG<br>(10 K); 5-7 PEG               | PEG (1 KDa); 52%.<br>PEG (10 KDa); 54%.          |
| ST3Gal3                    | N-linked glycans        | CMP-SA-PEG (10 KDa); no sialidase.           | 1-6 PEG (10 KDa); ~3 PEG's (119 or 27 hrs); 97% | 1-2 PEG's (27 hrs); 164%<br>4-5 PEG's (119 hrs); |
| CS-T-II<br>(Campylobacter) |                         | CMP-SA-PEG (20 KDa); no sialidase            | 2-3 PEG (20 KDa)                                | 96%  |

**FIGURE 5**

YNSGKLEEFVQGNLERECMEEKCSFEEAREVFENTERTTEFWKQYVDGDQ  
CESNPCLNGGSCKDDINSYECWCPFGFEGKNCELDVTCNIKNGRCEQFCK  
NSADNKVVCSCTEGYRLAENQKSCEPAVPFPCGRVSQSQTSLTRAEVFP  
DVDYVNSTEAEILDNITQSTQSFNDFTRVVGGEDAPKGQFPWQVVNLNGKV  
DAFCGGSIVNEKWIVTAAHCVETGVKITVVAGEHNIEETEHTEQKRNVIIPH  
HNYNAAINKYNHDIALLELDEPLVLNSYVTPICIADKEYTNIFLKFGSGYVSGWGRVFHK  
GRSALVLQYLRVPLVDRATCLRSTKFTIYNNMFCAGFHEGGRDSCQGDSGGPHVTEVE  
GTSFLTGIISWGEECAMKGKYGIYTKVSRYVNWIKEKTFLT

**FIGURE 6**

**FIGURE 7**  
**FIGURE 7**



## FIGURE 8

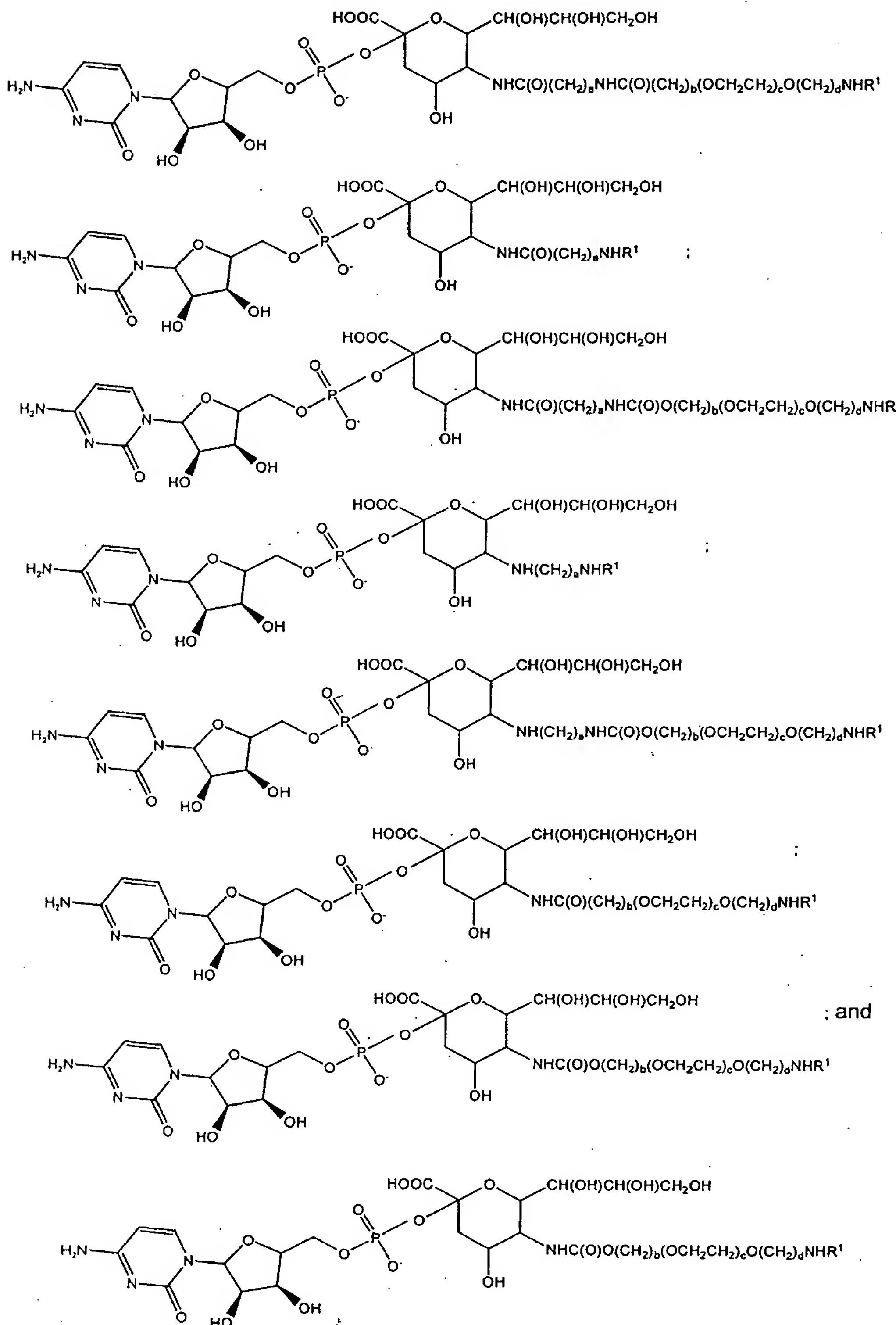


FIGURE 9A

| Protein  | Organism                      | EC#      | GenBank / GenPept  |  | SwissProt        | PDB / 3D |
|--|-------------------------------|----------|--|--|------------------|----------|
| At1g08280  | <i>Arabidopsis thaliana</i>   | n.d.     | AC011438<br>BT004583<br>NC_003070                          | AAF18241.1<br>AAO42829.1<br>NP_172305.1                              | Q84W00<br>Q9SGD2 |          |
| At1g08660/F22O13.14  | <i>Arabidopsis thaliana</i>   | n.d.     | AC003981<br>AY064135<br>AY124807<br>NC_003070<br>NM_180609 | AAF99778.1<br>AAL36042.1<br>AAM70516.1<br>NP_172342.1<br>NP_850940.1 | Q8VZJ0<br>Q9FRR9 |          |
| At3g48820/T21J18_90  | <i>Arabidopsis thaliana</i>   | n.d.     | AY080589<br>AY133816<br>AL132963<br>NM_114741              | AAL85966.1<br>AAM91750.1<br>CAB87910.1<br>NP_190451.1                | Q8RY00<br>Q9M301 |          |
| $\alpha$ -2,3-sialyltransferase (ST3GAL-IV)                                    | <i>Bos taurus</i>             | n.d.     | AJ584673   | CAE48298.1   |                  |          |
| $\alpha$ -2,3-sialyltransferase (St3Gal-V)                                     | <i>Bos taurus</i>             | n.d.     | AJ585768   | CAE51392.1   |                  |          |
| $\alpha$ -2,6-sialyltransferase (Siat7b)                                       | <i>Bos taurus</i>             | n.d.     | AJ620651   | CAF05850.1   |                  |          |
| $\alpha$ -2,8-sialyltransferase (SIAT8A)                                       | <i>Bos taurus</i>             | 2.4.99.8 | AJ699418   | CAG27880.1   |                  |          |
| $\alpha$ -2,8-sialyltransferase (Siat8D)                                       | <i>Bos taurus</i>             | n.d.     | AJ699421   | CAG27883.1   |                  |          |
| $\alpha$ -2,8-sialyltransferase ST8Sia $\alpha$ -III (Siat8C)                  | <i>Bos taurus</i>             | n.d.     | AJ704563   | CAG28696.1   |                  |          |
| CMP $\alpha$ -2,6-sialyltransferase (ST6Gal I)                                 | <i>Bos taurus</i>             | 2.4.99.1 | Y15111<br>NM_177517  | CAA75385.1<br>NP_803483.1  | O18974           |          |
| sialyltransferase 8 (fragment)   | <i>Bos taurus</i>             | n.d.     | AF450088   | AAL47018.1   | Q8WN13           |          |
| sialyltransferase ST3Gal-II (Siat4B)   | <i>Bos taurus</i>             | n.d.     | AJ748841   | CAG44450.1   |                  |          |
| sialyltransferase ST3Gal-III (Siat6)   | <i>Bos taurus</i>             | n.d.     | AJ748842   | CAG44451.1   |                  |          |
| sialyltransferase ST3Gal-VI (Siat10)   | <i>Bos taurus</i>             | n.d.     | AJ748843   | CAG44452.1   |                  |          |
| ST3Gal I   | <i>Bos taurus</i>             | n.d.     | AJ305086   | CAC24698.1   | Q9BEG4           |          |
| St6GalNAc-VI   | <i>Bos taurus</i>             | n.d.     | AJ620949   | CAF06586.1   |                  |          |
| CDS4   | <i>Branchiostoma floridae</i> | n.d.     | AF391289   | AAM18873.1   | Q8T771           |          |
| polysialyltransferase (PST) (fragment) ST8Sia IV                               | <i>Cercopithecus aethiops</i> | 2.4.99.- | AF210729   | AAF17105.1   | Q9TT09           |          |
| polysialyltransferase (STX) (fragment) ST8Sia II                               | <i>Cercopithecus aethiops</i> | 2.4.99.- | AF210318   | AAF17104.1   | Q9TT10           |          |
| $\alpha$ -2,3-sialyltransferase ST3Gal I (Siat4)                               | <i>Ciona intestinalis</i>     | n.d.     | AJ626815   | CAF25173.1   |                  |          |
| $\alpha$ -2,3-sialyltransferase ST3Gal I (Siat4)                               | <i>Ciona savignyi</i>         | n.d.     | AJ626814   | CAF25172.1   |                  |          |
| $\alpha$ -2,8-polysialyltransferase ST8Sia IV                                  | <i>Cricetulus griseus</i>     | 2.4.99.- | Z46801   | AAE28634<br>CAA86822.1   | Q64690           |          |
| Gal $\beta$ -1,3/4-GlcNAc $\alpha$ -2,3-sialyltransferase St3Gal I             | <i>Cricetulus griseus</i>     | n.d.     | AY266675   | AAP22942.1   | Q80WL0           |          |
| Gal $\beta$ -1,3/4-GlcNAc $\alpha$ -2,3-sialyltransferase St3Gal II (fragment) | <i>Cricetulus griseus</i>     | n.d.     | AY266676   | AAP22943.1   | Q80WK9           |          |
| $\alpha$ -2,3-sialyltransferase ST3Gal I (Siat4)                               | <i>Danio rerio</i>            | n.d.     | AJ783740   | CAH04017.1   |                  |          |
| $\alpha$ -2,3-sialyltransferase ST3Gal II (Siat5)                              | <i>Danio rerio</i>            | n.d.     | AJ783741   | CAH04018.1   |                  |          |

FIGURE 9B

| Protein   | Organism                       | EC#      | GenBank / GenPept  |   | SwissProt        | PDB / 3D |
|---|--------------------------------|----------|--|---|------------------|----------|
| $\alpha$ -2,3-sialyltransferase ST3Gal III (Siat6)                    | <i>Danio rerio</i>             | n.d.     | AJ626821   | <b>CAF25179.1</b>   |                  |          |
| $\alpha$ -2,3-sialyltransferase ST3Gal IV (Siat4c)                    | <i>Danio rerio</i>             | n.d.     | AJ744809   | <b>CAG32845.1</b>   |                  |          |
| $\alpha$ -2,3-sialyltransferase ST3Gal V-r (Siat5-related)            | <i>Danio rerio</i>             | n.d.     | AJ783742   | <b>CAH04019.1</b>   |                  |          |
| $\alpha$ -2,6-sialyltransferase ST6Gal I (Siat1)                      | <i>Danio rerio</i>             | n.d.     | AJ744801   | <b>CAG32837.1</b>   |                  |          |
| $\alpha$ -2,6-sialyltransferase ST6GalNAc II (Siat7B)                 | <i>Danio rerio</i>             | n.d.     | AJ634459   | <b>CAG25680.1</b>   |                  |          |
| $\alpha$ -2,6-sialyltransferase ST6GalNAc V (Siat7E) (fragment)       | <i>Danio rerio</i>             | n.d.     | AJ646874   | <b>CAG26703.1</b>   |                  |          |
| $\alpha$ -2,6-sialyltransferase ST6GalNAc VI (Siat7F) (fragment)      | <i>Danio rerio</i>             | n.d.     | AJ646883   | <b>CAG26712.1</b>   |                  |          |
| $\alpha$ -2,8-sialyltransferase ST8Sia I (Siat 8A) (fragment)         | <i>Danio rerio</i>             | n.d.     | AJ715535   | <b>CAG29374.1</b>   |                  |          |
| $\alpha$ -2,8-sialyltransferase ST8Sia III (Siat 8C) (fragment)       | <i>Danio rerio</i>             | n.d.     | AJ715543   | <b>CAG29382.1</b>   |                  |          |
| $\alpha$ -2,8-sialyltransferase ST8Sia IV (Siat 8D) (fragment)        | <i>Danio rerio</i>             | n.d.     | AJ715545   | <b>CAG29384.1</b>   |                  |          |
| $\alpha$ -2,8-sialyltransferase ST8Sia V (Siat 8E) (fragment)         | <i>Danio rerio</i>             | n.d.     | AJ715546   | <b>CAG29385.1</b>   |                  |          |
| $\alpha$ -2,8-sialyltransferase ST8Sia VI (Siat 8F) (fragment)        | <i>Danio rerio</i>             | n.d.     | AJ715551   | <b>CAG29390.1</b>   |                  |          |
| $\beta$ -galactosamide $\alpha$ -2,6-sialyltransferase II (ST6Gal II) | <i>Danio rerio</i>             | n.d.     | AJ627627   | <b>CAF29495.1</b>   |                  |          |
| <i>N</i> -glycan $\alpha$ -2,8-sialyltransferase                      | <i>Danio rerio</i>             | n.d.     | BC050483<br>AY055462<br>NM_153662                                      | AAH50483.1<br><b>AAL17875.1</b><br>NP_705948.1  | Q7ZU51<br>Q8QH83 |          |
| ST3Gal III-related (siat6r)   | <i>Danio rerio</i>             | n.d.     | BC053179<br>AJ626820<br>NM_200355                                      | AAH53179.1<br><b>CAF25178.1</b><br>NP_956649.1  | Q7T3B9           |          |
| St3Gal-V  | <i>Danio rerio</i>             | n.d.     | AJ619960   | <b>CAF04061.1</b>   |                  |          |
| st6GalNAc-VI  | <i>Danio rerio</i>             | n.d.     | BC060932<br>AJ620947   | <b>AAH60932.1</b><br>CAF06584.1   |                  |          |
| $\alpha$ -2,6-sialyltransferase (CG4871) ST6Gal I                     | <i>Drosophila melanogaster</i> | 2.4.99.1 | AE003465<br>AF218237<br>AF397532<br>AE003465<br>NM_079129<br>NM_166684 | AAF47256.1<br><b>AAG13185.1</b><br>AAK92126.1<br>AAM70791.1<br>NP_523853.1<br>NP_726474.1 | Q9GU23<br>Q9W121 |          |
| $\alpha$ -2,3-sialyltransferase (ST3Gal-VI)                           | <i>Gallus gallus</i>           | n.d.     | AJ585767<br>AJ627204   | <b>CAE51391.1</b><br>CAF25503.1   |                  |          |
| $\alpha$ -2,3-sialyltransferase ST3Gal I                              | <i>Gallus gallus</i>           | 2.4.99.4 | X80503<br>NM_205217  | <b>CAA56666.1</b><br>NP_990548.1  | Q11200           |          |
| $\alpha$ -2,3-sialyltransferase ST3Gal IV (fragment)                  | <i>Gallus gallus</i>           | 2.4.99.- | AF035250   | <b>AAC14163.1</b>   | O73724           |          |
| $\alpha$ -2,3-sialyltransferase (ST3GAL-II)                           | <i>Gallus gallus</i>           | n.d.     | AJ585761   | <b>CAE51385.2</b>   |                  |          |
| $\alpha$ -2,6-sialyltransferase (Siat7b)                              | <i>Gallus gallus</i>           | n.d.     | AJ620653   | <b>CAF05852.1</b>   |                  |          |
| $\alpha$ -2,6-sialyltransferase ST6Gal I                              | <i>Gallus gallus</i>           | 2.4.99.1 | X75558<br>NM_205241  | <b>CAA53235.1</b><br>NP_990572.1  | Q92182           |          |
| $\alpha$ -2,6-sialyltransferase                                       | <i>Gallus gallus</i>           | 2.4.99.3 | -  | AAE68028.1  | Q92183           |          |

FIGURE 9C

| Protein   | Organism |                      | EC#      | GenBank / GenPept  |  | SwissProt  | PDB / 3D |
|---|----------|----------------------|----------|--|--|--|----------|
| ST6GalNAc I   |          |                      |          | X74946<br>NM_205240  | AAE68029.1<br>CAA52902.1<br>NP_990571.1  |  |          |
| $\alpha$ -2,6-sialyltransferase ST6GalNAc II                          |          | <i>Gallus gallus</i> | 2.4.99.- | X77775<br>NM_205233  | AAE68030.1<br>CAA54813.1<br>NP_990564.1  | Q92184   |          |
| $\alpha$ -2,6-sialyltransferase ST6GalNAc III (SIAT7C) (fragment)     |          | <i>Gallus gallus</i> | n.d.     | AJ634455   | CAG25677.1   |  |          |
| $\alpha$ -2,6-sialyltransferase ST6GalNAc V (SIAT7E) (fragment)       |          | <i>Gallus gallus</i> | n.d.     | AJ646877   | CAG26706.1   |  |          |
| $\alpha$ -2,8-sialyltransferase (GD3 Synthase) ST8Sia I               |          | <i>Gallus gallus</i> | 2.4.99.- | U73176   | AAC28888.1   | P79783   |          |
| $\alpha$ -2,8-sialyltransferase (SIAT8B)                              |          | <i>Gallus gallus</i> | n.d.     | AJ699419   | CAG27881.1   |  |          |
| $\alpha$ -2,8-sialyltransferase (SIAT8C)                              |          | <i>Gallus gallus</i> | n.d.     | AJ699420   | CAG27882.1   |  |          |
| $\alpha$ -2,8-sialyltransferase (SIAT8F)                              |          | <i>Gallus gallus</i> | n.d.     | AJ699424   | CAG27886.1   |  |          |
| $\alpha$ -2,8-sialyltransferase ST8Sia-V (SIAT8C)                     |          | <i>Gallus gallus</i> | n.d.     | AJ704564   | CAG28697.1   |  |          |
| $\beta$ -galactosamide $\alpha$ -2,6-sialyltransferase II (ST6Gal II) |          | <i>Gallus gallus</i> | n.d.     | AJ627629   | CAF29497.1   |  |          |
| GM3 synthase (SIAT9)  |          | <i>Gallus gallus</i> | 2.4.99.9 | AY515255   | AAS83519.1   |  |          |
| polysialyltransferase ST8Sia IV                                       |          | <i>Gallus gallus</i> | 2.4.99.- | AF008194   | AAB95120.1   | O42399   |          |
| $\alpha$ -2,3-sialyltransferase ST3Gal I                              |          | <i>Homo sapiens</i>  | 2.4.99.4 | L29555<br>AF059321<br>L13972<br>AF155238<br>AF186191<br>BC018357<br>NM_003033<br>NM_173344   | AAA36612.1<br>AAC17874.1<br>AAC37574.1<br>AAD39238.1<br>AAG29876.1<br>AAH18357.1<br>NP_003024.1<br>NP_775479.1   | Q11201<br>O60677<br>Q9UN51   |          |
| $\alpha$ -2,3-sialyltransferase ST3Gal II                             |          | <i>Homo sapiens</i>  | 2.4.99.4 | U63090<br>BC036777<br>X96667<br>NM_006927  | AAB40389.1<br>AAH36777.1<br>CAA65447.1<br>NP_008858.1  | Q16842<br>O00654   |          |
| $\alpha$ -2,3-sialyltransferase ST3Gal III (SiaT6)                    |          | <i>Homo sapiens</i>  | 2.4.99.6 | L23768<br>BC050380<br>AF425851<br>AF425852<br>AF425853<br>AF425854<br>AF425855<br>AF425856<br>AF425857<br>AF425858<br>AF425859<br>AF425860<br>AF425861<br>AF425862<br>AF425863<br>AF425864<br>AF425865<br>AF425866<br>AF425867<br>AY167992<br>AY167993<br>AY167994 | AAA35778.1<br>AAH50380.1<br>AAO13859.1<br>AAO13860.1<br>AAO13861.1<br>AAO13862.1<br>AAO13863.1<br>AAO13864.1<br>AAO13865.1<br>AAO13866.1<br>AAO13867.1<br>AAO13868.1<br>AAO13869.1<br>AAO13870.1<br>AAO13871.1<br>AAO13872.1<br>AAO13873.1<br>AAO13874.1<br>AAO13875.1<br>AAO38806.1<br>AAO38807.1<br>AAO38808.1 | Q11203<br>Q86UR6<br>Q86UR7<br>Q86UR8<br>Q86UR9<br>Q86US0<br>Q86US1<br>Q86US2<br>Q8IX43<br>Q8IX44<br>Q8IX45<br>Q8IX46<br>Q8IX47<br>Q8IX48<br>Q8IX49<br>Q8IX50<br>Q8IX51<br>Q8IX52<br>Q8IX53<br>Q8IX54<br>Q8IX55<br>Q8IX56 |          |

FIGURE 9D

| Protein  | Organism |                     | EC#      | GenBank / GenPept  |  | SwissProt  | PDB / 3D |
|--|----------|---------------------|----------|--|--|--|----------|
|  |          |                     |          | AY167995<br>AY167996<br>AY167997<br>AY167998<br>NM_006279<br>NM_174964<br>NM_174965<br>NM_174966<br>NM_174967<br>NM_174969<br>NM_174970<br>NM_174972 | AAO38809.1<br>AAO38810.1<br>AAO38811.1<br>AAO38812.1<br>NP_006270.1<br>NP_777624.1<br>NP_777625.1<br>NP_777626.1<br>NP_777627.1<br>NP_777629.1<br>NP_777630.1<br>NP_777632.1 | Q8IX57<br>Q8IX58   |          |
| $\alpha$ -2,3-sialyltransferase ST3Gal IV              |          | <i>Homo sapiens</i> | 2.4.99.- | L23767<br>AF035249<br>BC010645<br>AY040826<br>AF516602<br>AF516603<br>AF516604<br>AF525084<br>X74570<br>CR456858<br>NM_006278                        | AAA16460.1<br>AAC14162.1<br>AAH10645.1<br>AAK93790.1<br>AAM66431.1<br>AAM66432.1<br>AAM66433.1<br>AAM81378.1<br>CAA52662.1<br>CAG33139.1<br>NP_006269.1                      | Q11206<br>O60497<br>Q96QQ9<br>Q8N6A6<br>Q8N6A7<br>Q8NFD3<br>Q8NFG7 |          |
| $\alpha$ -2,3-sialyltransferase ST3Gal VI              |          | <i>Homo sapiens</i> | 2.4.99.4 | AF119391<br>BC023312<br>AB022918<br>AX877828<br>AX886023<br>NM_006100  | AAD39131.1<br>AAH23312.1<br>BAA77609.1<br>CAE89895.1<br>CAF00161.1<br>NP_006091.1  | Q9Y274   |          |
| $\alpha$ -2,6-sialyltransferase (ST6Gal II ; KIAA1877) |          | <i>Homo sapiens</i> | n.d.     | BC008680<br>AB058780<br>AB059555<br>AJ512141<br>AX795193<br>AX795193<br>NM_032528  | AAH08680.1<br>BAB47506.1<br>BAC24793.1<br>CAD54408.1<br>CAE48260.1<br>CAE48261.1<br>NP_115917.1  | Q86Y44<br>Q8IUG7<br>Q96HE4<br>Q96JF0                               |          |
| $\alpha$ -2,6-sialyltransferase (ST6GALNAC III)        |          | <i>Homo sapiens</i> | n.d.     | BC059363<br>AY358540<br>AK091215<br>AJ507291<br>NM_152996  | AAH59363.1<br>AAQ88904.1<br>BAC03611.1<br>CAD45371.1<br>NP_694541.1  | Q8N259<br>Q8NDV1   |          |
| $\alpha$ -2,6-sialyltransferase (ST6GalNAc V)          |          | <i>Homo sapiens</i> | n.d.     | BC001201<br>AK056241<br>AL035409<br>AJ507292<br>NM_030965  | AAH01201.1<br>BAB71127.1<br>CAB72344.1<br>CAD45372.1<br>NP_112227.1  | Q9BVH7   |          |
| $\alpha$ -2,6-sialyltransferase (SThM) ST6GalNAc II    |          | <i>Homo sapiens</i> | 2.4.99.- | U14550<br>BC040455<br>AJ251053<br>NM_006456  | AAA52228.1<br>AAH40455.1<br>CAB61434.1<br>NP_006447.1  | Q9UJ37<br>Q12971   |          |
| $\alpha$ -2,6-sialyltransferase ST6Gal I               |          | <i>Homo sapiens</i> | 2.4.99.1 | BC031476<br>BC040009<br>A17362<br>A23699<br>X17247<br>X54363<br>X62822<br>NM_003032<br>NM_173216   | AAH31476.1<br>AAH40009.1<br>CAA01327.1<br>CAA01686.1<br>CAA35111.1<br>CAA38246.1<br>CAA44634.1<br>NP_003023.1<br>NP_775323.1   | P15907   |          |
| $\alpha$ -2,6-sialyltransferase ST6GalNAc I            |          | <i>Homo sapiens</i> | 2.4.99.3 | BC022462<br>AY096001<br>AY358918<br>AK000113<br>Y11339   | AAH22462.1<br>AAM22800.1<br>AAQ89277.1<br>BAA90953.1<br>CAA72179.2   | Q8TBJ6<br>Q9NSC7<br>Q9NXQ7   |          |

FIGURE 9E

| Protein   | Organism            | EC#      | GenBank / GenPept   |   | SwissProt  | PDB / 3D |
|---|---------------------|----------|---|---|--|----------|
|   |                     |          | NM_018414   | NP_060884.1   |  |          |
| $\alpha$ -2,8-polysialyltransferase ST8Sia IV                                     | <i>Homo sapiens</i> | 2.4.99.- | L41680<br>BC027866<br>BC053657<br>NM_005668   | AAC41775.1<br>AAH27866.1<br>AAH53657.1<br>NP_005659.1   | Q8N1F4<br>Q92187<br>Q92693                               |          |
| $\alpha$ -2,8-sialyltransferase (GD3 synthase) ST8Sia I                           | <i>Homo sapiens</i> | 2.4.99.8 | L32867<br>L43494<br>BC046158<br>-<br>AY569975<br>D26360<br>X77922<br>NM_003034  | AAA62366.1<br>AAC37586.1<br>AAH46158.1<br>AAQ53140.1<br>AAS75783.1<br>BAA05391.1<br>CAA54891.1<br>NP_003025.1   | Q86X71<br>Q92185<br>Q93064                               |          |
| $\alpha$ -2,8-sialyltransferase ST8Sia II   | <i>Homo sapiens</i> | 2.4.99.- | L29556<br>U82762<br>U33551<br>BC069584<br>NM_006011   | AAA36613.1<br>AAB51242.1<br>AAC24458.1<br>AAH69584.1<br>NP_006002.1   | Q92186<br>Q92470<br>Q92746                               |          |
| $\alpha$ -2,8-sialyltransferase ST8Sia III  | <i>Homo sapiens</i> | 2.4.99.- | AF004668<br>AF003092<br>NM_015879   | AAB87642.1<br>AAC15901.2<br>NP_056963.1   | O43173<br>Q9NS41   |          |
| $\alpha$ -2,8-sialyltransferase ST8Sia V  | <i>Homo sapiens</i> | 2.4.99.- | U91641<br>CR457037<br>NM_013305   | AAC51727.1<br>CAG33318.1<br>NP_037437.1   | O15466   |          |
| ENSP00000020221 (fragment)  |                     | n.d.     | AC023295  | -   |  |          |
| lactosylceramide $\alpha$ -2,3-sialyltransferase (ST3Gal V)                       | <i>Homo sapiens</i> | 2.4.99.9 | AF105026<br>AF119415<br>BC065936<br>AY152815<br>AAP65066<br>AY359105<br>AB018356<br>AX876536<br>NM_003896                             | AAD14634.1<br>AAF66146.1<br>AAH65936.1<br>AAO16866.1<br>AAP65066.1<br>AAQ89463.1<br>BAA33950.1<br>CAE89320.1<br>NP_003887.2   | Q9UNP4<br>O94902   |          |
| <i>N</i> -acetylgalactosaminide $\alpha$ -2,6-sialyltransferase (ST6GalNAc VI)    | <i>Homo sapiens</i> | 2.4.99.- | BC006564<br>BC007802<br>BC016299<br>AY358672<br>AB035173<br>AK023900<br>AJ507293<br>AX880950<br>CR457318<br>NM_013443                 | AAH06564.1<br>AAH07802.1<br>AAH16299.1<br>AAQ89035.1<br><b>BAA87035.1</b><br>BAB14715.1<br>CAD45373.1<br>CAE91145.1<br>CAG33599.1<br>NP_038471.2                              | Q969X2<br>Q9H8A2<br>Q9ULB8                               |          |
| <i>N</i> -acetylgalactosaminide $\alpha$ -2,6-sialyltransferase IV (ST6GalNAc IV) | <i>Homo sapiens</i> | 2.4.99.- | AF127142<br>BC036705<br>-<br>AB035172<br>AK000600<br>Y17461<br>AJ271734<br>AX061620<br>AX068265<br>AX969252<br>NM_014403<br>NM_175039 | AAF00102.1<br>AAH36705.1<br>AAP63349.1<br><b>BAA87034.1</b><br>BAA91281.1<br>CAB44354.1<br>CAC07404.1<br>CAC24981.1<br>CAC27250.1<br>CAF14360.1<br>NP_055218.3<br>NP_778204.1 | Q9H4F1<br>Q9NWU6<br>Q9UKU1<br>Q9ULB9<br>Q9Y3G3<br>Q9Y3G4 |          |
| ST8SIA-VI (fragment)  | <i>Homo sapiens</i> | n.d.     | AJ621583<br>XM_291725   | <b>CAF21722.1</b><br>XP_291725.2  |  |          |
| unnamed protein product   | <i>Homo sapiens</i> | n.d.     | AK021929<br>AX881696  | <b>BAB13940.1</b><br>CAE91353.1   | Q9HAA9   |          |
| Gal $\beta$ -1,3/4-GlcNAc $\alpha$ -  | <i>Mesocricetus</i> | 2.4.99.6 | AJ245699  | <b>CAB53394.1</b>   | Q9QXF6   |          |

FIGURE 9F

| Protein   | Organism                    | EC#                 | GenBank / GenPept |  | SwissProt  | PDB / 3D   |
|---|-----------------------------|---------------------|-------------------|--|--|--|
| 2,3-sialyltransferase (ST3Gal III)                                    | <i>auratus</i>              |                     |                   |  |  |  |
| Gal $\beta$ -1,3/4-GlcNAc $\alpha$ -2,3-sialyltransferase (ST3Gal IV) | <i>Mesocricetus auratus</i> | 2.4.99.6            | AJ245700          | <b>CAB53395.1</b>  | Q9QXF5   |  |
| GD3 synthase (fragment) ST8Sia I                                      | <i>Mesocricetus auratus</i> | n.d.                | AF141657          | <b>AAD33879.1</b>  | Q9WUL1   |  |
| polysialyltransferase (ST8Sia IV)                                     | <i>Mesocricetus auratus</i> | 2.4.99.-            | AJ245701          | <b>CAB53396.1</b>  | Q9QXF4   |  |
| $\alpha$ -2,3-sialyltransferase ST3Gal I                              | <i>St3gal1</i>              | <i>Mus musculus</i> | 2.4.99.4          | AF214028<br>AK031344<br>AK078469<br>X73523<br>NM_009177                                      | AAF60973.1<br>BAC27356.1<br>BAC37290.1<br>CAA51919.1<br>NP_033203.1  | P54751<br>Q11202<br>Q9JL30   |
| $\alpha$ -2,3-sialyltransferase ST3Gal II                             | <i>St3gal2</i>              | <i>Mus musculus</i> | 2.4.99.4          | BC015264<br>BC066064<br>AK034554<br>AK034863<br>AK053827<br>X76989<br>NM_009179<br>NM_178048 | AAH15264.1<br>AAH66064.1<br>BAC28752.1<br>BAC28859.1<br>BAC35543.1<br>CAA54294.1<br>NP_033205.1<br>NP_835149.1 | Q11204<br>Q8BPL0<br>Q8BSA0<br>Q8BSE9<br>Q91WH6   |
| $\alpha$ -2,3-sialyltransferase ST3Gal III                            | <i>St3gal3</i>              | <i>Mus musculus</i> | 2.4.99.-          | BC006710<br>AK005053<br>AK013016<br>X84234<br>NM_009176                                      | AAH06710.1<br><b>BAB23779.1</b><br>BAB28598.1<br>CAA59013.1<br>NP_033202.2                                     | P97325<br>Q922X5<br>Q9CZ48<br>Q9DBB6   |
| $\alpha$ -2,3-sialyltransferase ST3Gal IV                             | <i>St3gal4</i>              | <i>Mus musculus</i> | 2.4.99.4          | BC011121<br>BC050773<br>D28941<br>AK008543<br>AB061305<br>X95809<br>NM_009178                | AAH11121.1<br><b>AAH50773.1</b><br>BAA06068.1<br>BAB25732.1<br>BAB47508.1<br>CAA65076.1<br>NP_033204.2         | P97354<br>Q61325<br>Q91Y74<br>Q921R5<br>Q9CVE8   |
| $\alpha$ -2,3-sialyltransferase ST3Gal VI                             | <i>St3gal6</i>              | <i>Mus musculus</i> | 2.4.99.4          | AF119390<br>BC052338<br>AB063326<br>AK033562<br>AK041173<br>NM_018784                        | AAD39130.1<br>AAH52338.1<br><b>BAB79494.1</b><br>BAC28360.1<br>BAC30851.1<br>NP_061254                         | Q80UR7<br>Q8BLV1<br>Q8VIB3<br>Q9WVG2   |
| $\alpha$ -2,6-sialyltransferase ST6GalNAc II                          | <i>St6galnac2</i>           | <i>Mus musculus</i> | 2.4.99.-          | NM_009180  | 6677963<br>BC010208<br>AB027198<br>AK004613<br>X93999<br>X94000<br>NM_009180                                   | <b>P70277</b><br>AAH10208.1<br>BAB00637.1<br>BAB23410.1<br>CAA63821.1<br>CAA63822.1<br>NP_033206.2 |
| $\alpha$ -2,6-sialyltransferase ST6Gal I                              | <i>St6gal1</i>              | <i>Mus musculus</i> | 2.4.99.1          | -  | AAE68031.1<br>BC027833<br>D16106<br>AK034768<br>AK084124<br>NM_145933  | Q64685<br>AAH27833.1<br>BAA03680.1<br>BAC28828.1<br>BAC39120.1<br>NP_666045.1                      |
| $\alpha$ -2,6-sialyltransferase ST6Gal II                             | <i>St6gal2</i>              | <i>Mus musculus</i> | n.d.              |  | AK082566<br>AB095093<br>AK129462<br>NM_172829  | <b>BAC38534.1</b><br><b>BAC87752.1</b><br>BAC98272.1<br>NP_766417.1                                |
| $\alpha$ -2,6-sialyltransferase ST6GalNAc I                           | <i>St6galnac1</i>           | <i>Mus musculus</i> | 2.4.99.3          | Y11274<br>NM_011371  | <b>CAA72137.1</b><br>NP_035501.1   | Q9QZ39<br>Q9JP5  |
| $\alpha$ -2,6-sialyltransferase ST6GalNAc III                         | <i>St6galnac3</i>           | <i>Mus musculus</i> | n.d.              |  | BC058387<br>AK034804<br>Y11342<br>Y11343   | AAH58387.1<br>BAC28836.1<br>CAA72181.2<br><b>CAB95031.1</b>  |

FIGURE 9G

| Protein  | Organism          |                     | EC#      | GenBank / GenPept   |  | SwissProt  | PDB / 3D |
|--|-------------------|---------------------|----------|---|--|--|----------|
|  |                   |                     |          | NM_011372   | NP_035502  |  |          |
| $\alpha$ -2,6-sialyltransferase<br>ST6GalNAc IV                                      | <i>St6galnac4</i> | <i>Mus musculus</i> | 2.4.99.7 | BC056451<br>AK085730<br>AJ007310<br>Y15779<br>Y15780<br>Y19055<br>Y19057<br>NM_011373     | AAH56451.1<br>BAC39523.1<br>CAA07446.1<br>CAB43507.1<br><b>CAB43514.1</b><br>CAB93946.1<br>CAB93948.1<br>NP_035503.1   | Q8C3J2<br>Q9JHP2<br>Q9R2B6<br>O88725<br>Q9JHP0<br>Q9QUP9<br>Q9R2B5 |          |
| $\alpha$ -2,8-sialyltransferase<br>(GD3 synthase) ST8Sia I                           | <i>St8sia1</i>    | <i>Mus musculus</i> | 2.4.99.8 | L38677<br>BC024821<br>AK046188<br>AK052444<br>X84235<br>AJ401102<br>NM_011374             | AAA91869.1<br><b>AAH24821.1</b><br>BAC32625.1<br>BAC34994.1<br>CAA59014.1<br>CAC20706.1<br>NP_035504.1                 | Q64468<br>Q64687<br>Q8BL76<br>Q8BWI0<br>Q8K1C1<br>Q9EPK0           |          |
| $\alpha$ -2,8-sialyltransferase<br>(ST8Sia VI)                                       | <i>St8sia6</i>    | <i>Mus musculus</i> | n.d.     | AB059554<br>AK085105<br>NM_145838   | <b>BAC01265.1</b><br>BAC39367.1<br>NP_665837.1   | Q8BI43<br>Q8K4T1   |          |
| $\alpha$ -2,8-sialyltransferase<br>ST8Sia II   | <i>St8sia2</i>    | <i>Mus musculus</i> | 2.4.99.- | X83562<br>X99646<br>X99647<br>X99648<br>X99649<br>X99650<br>X99651<br>NM_009181           | CAA58548.1<br>CAA67965.1<br>CAA67965.1<br>CAA67965.1<br>CAA67965.1<br>CAA67965.1<br>CAA67965.1<br>NP_033207.1          | O35696   |          |
| $\alpha$ -2,8-sialyltransferase<br>ST8Sia IV   | <i>St8sia4</i>    | <i>Mus musculus</i> | 2.4.99.8 | BC060112<br>AK003690<br>AK041723<br>AJ223956<br>X86000<br>Y09484<br>NM_009183             | AAH60112.1<br>BAB22941.1<br>BAC31044.1<br><b>CAA11685.1</b><br>CAA59992.1<br>CAA70692.1<br>NP_033209.1                 | Q64692<br>Q8BY70   |          |
| $\alpha$ -2,8-sialyltransferase<br>ST8Sia V  | <i>St8sia5</i>    | <i>Mus musculus</i> | 2.4.99.- | BC034855<br>AK078670<br>X98014<br>X98014<br>X98014<br>NM_013666<br>NM_153124<br>NM_177416 | AAH34855.1<br>BAC37354.1<br><b>CAA66642.1</b><br>CAA66643.1<br>CAA66644.1<br>NP_038694.1<br>NP_694764.1<br>NP_803135.1 | P70126<br>P70127<br>P70128<br>Q8BJW0<br>Q8JZQ3                     |          |
| $\alpha$ -2,8-sialyltransferase<br>ST8Sia III  | <i>St8sia3</i>    | <i>Mus musculus</i> | 2.4.99.- | BC075645<br>AK015874<br>X80502<br>NM_009182   | AAH75645.1<br>BAB30012.1<br>CAA56665.1<br>NP_033208.1  | Q64689<br>Q9CUJ6   |          |
| GD1 synthase<br>(ST6GalNAc V)  | <i>St6galnac5</i> | <i>Mus musculus</i> | n.d.     | BC055737<br>AB030836<br>AB028840<br>AK034387<br>AK038434<br>AK042683<br>NM_012028         | <b>AAH55737.1</b><br>BAA85747.1<br>BAA89292.1<br>BAC28693.1<br>BAC29997.1<br>BAC31331.1<br>NP_036158.2                 | Q8CAM7<br>Q8CBX1<br>Q9QYJ1<br>Q9R0K6                               |          |
| GM3 synthase ( $\alpha$ -2,3-sialyltransferase)<br>ST3Gal V                          | <i>St3gal5</i>    | <i>Mus musculus</i> | 2.4.99.9 | AF119416<br>-<br>AB018048<br>AB013302<br>AK012961<br>Y15003<br>NM_011375                  | <b>AAF66147.1</b><br>AAP65063.1<br>BAA33491.1<br>BAA76467.1<br>BAB28571.1<br>CAA75235.1<br>NP_035505.1                 | O88829<br>Q9CZ65<br>Q9QWF9   |          |
| <i>N</i> -acetylgalactosaminide<br>$\alpha$ -2,6-sialyltransferase<br>(ST6GalNAc VI) | <i>St6galnac6</i> | <i>Mus musculus</i> | 2.4.99.- | BC036985<br>AB035174<br>AB035123<br>AK030648  | AAH36985.1<br>BAA87036.1<br>BAA95940.1<br>BAC27064.1   | Q8CDC3<br>Q8JZW3<br>Q9JM95<br>Q9R0G9                               |          |

FIGURE 9H

| Protein  | Organism                                      | EC#      | GenBank / GenPept               |  | SwissProt | PDB / 3D |
|--|---|----------|---------------------------------|--|-----------|----------|
|  |   |          | NM_016973                       | NP_058669.1  |           |          |
| M138L  | <i>Myxoma virus</i>                           | n.d.     | U46578<br>AF170726<br>NC_001132 | AAD00069.1<br>AAE61323.1<br>AAE61326.1<br><b>AAF15026.1</b><br>NP_051852.1 |           |          |
| $\alpha$ -2,3-sialyltransferase (St3Gal-I)                       | <i>Oncorhynchus mykiss</i>                    | n.d.     | AJ585760                        | <b>CAE51384.1</b>  |           |          |
| $\alpha$ -2,6-sialyltransferase (Siat1)                          | <i>Oncorhynchus mykiss</i>                    | n.d.     | AJ620649                        | <b>CAF05848.1</b>  |           |          |
| $\alpha$ -2,8-polysialyltransferase IV (ST8Sia IV)               | <i>Oncorhynchus mykiss</i>                    | n.d.     | AB094402                        | <b>BAC77411.1</b>  | Q7T2X5    |          |
| GalNAc $\alpha$ -2,6-sialyltransferase (RtST6GalNAc)             | <i>Oncorhynchus mykiss</i>                    | n.d.     | AB097943                        | <b>BAC77520.1</b>  | Q7T2X4    |          |
| $\alpha$ -2,3-sialyltransferase ST3Gal IV                        | <i>Oryctolagus cuniculus</i>                  | 2.4.99.- | AF121967                        | <b>AAF28871.1</b>  | Q9N257    |          |
| OJ1217_F02.7   | <i>Oryza sativa (japonica cultivar-group)</i> | n.d.     | AP004084                        | <b>BAD07616.1</b>  |           |          |
| OSJNBa0043L24.2 or OSJNBb0002J11.9                               | <i>Oryza sativa (japonica cultivar-group)</i> | n.d.     | AL731626<br>AL662969            | <b>CAD41185.1</b><br>CAE04714.1  |           |          |
| P0683f02.18 or P0489B03.1  | <i>Oryza sativa (japonica cultivar-group)</i> | n.d.     | AP003289<br>AP003794            | <b>BAB63715.1</b><br>BAB90552.1  |           |          |
| $\alpha$ -2,6-sialyltransferase ST6GalNAc V (Siat7E) (fragment)  | <i>Oryzias latipes</i>                        | n.d.     | AJ646876                        | <b>CAG26705.1</b>  |           |          |
| $\alpha$ -2,3-sialyltransferase ST3Gal I (Siat4)                 | <i>Pan troglodytes</i>                        | n.d.     | AJ744803                        | <b>CAG32839.1</b>  |           |          |
| $\alpha$ -2,3-sialyltransferase ST3Gal II (Siat5)                | <i>Pan troglodytes</i>                        | n.d.     | AJ744804                        | <b>CAG32840.1</b>  |           |          |
| $\alpha$ -2,3-sialyltransferase ST3Gal III (Siat6)               | <i>Pan troglodytes</i>                        | n.d.     | AJ626819                        | <b>CAF25177.1</b>  |           |          |
| $\alpha$ -2,3-sialyltransferase ST3Gal IV (Siat4c)               | <i>Pan troglodytes</i>                        | n.d.     | AJ626824                        | <b>CAF25182.1</b>  |           |          |
| $\alpha$ -2,3-sialyltransferase ST3Gal VI (Siat10)               | <i>Pan troglodytes</i>                        | n.d.     | AJ744808                        | <b>CAG32844.1</b>  |           |          |
| $\alpha$ -2,6-sialyltransferase (Sia7A)                          | <i>Pan troglodytes</i>                        | n.d.     | AJ748740                        | <b>CAG38615.1</b>  |           |          |
| $\alpha$ -2,6-sialyltransferase (Sia7B)                          | <i>Pan troglodytes</i>                        | n.d.     | AJ748741                        | <b>CAG38616.1</b>  |           |          |
| $\alpha$ -2,6-sialyltransferase ST6GalNAc III (Siat7C)           | <i>Pan troglodytes</i>                        | n.d.     | AJ634454                        | <b>CAG25676.1</b>  |           |          |
| $\alpha$ -2,6-sialyltransferase ST6GalNAc IV (Siat7D) (fragment) | <i>Pan troglodytes</i>                        | n.d.     | AJ646870                        | <b>CAG26699.1</b>  |           |          |
| $\alpha$ -2,6-sialyltransferase ST6GalNAc V (Siat7E)             | <i>Pan troglodytes</i>                        | n.d.     | AJ646875                        | <b>CAG26704.1</b>  |           |          |
| $\alpha$ -2,6-sialyltransferase ST6GalNAc VI (Siat7F) (fragment) | <i>Pan troglodytes</i>                        | n.d.     | AJ646882                        | <b>CAG26711.1</b>  |           |          |
| $\alpha$ -2,8-sialyltransferase 8A (Siat8A)                      | <i>Pan troglodytes</i>                        | 2.4.99.8 | AJ697658                        | <b>CAG26896.1</b>  |           |          |
| $\alpha$ -2,8-sialyltransferase 8B (Siat8B)                      | <i>Pan troglodytes</i>                        | n.d.     | AJ697659                        | <b>CAG26897.1</b>  |           |          |
| $\alpha$ -2,8-sialyltransferase 8C (Siat8C)                      | <i>Pan troglodytes</i>                        | n.d.     | AJ697660                        | <b>CAG26898.1</b>  |           |          |
| $\alpha$ -2,8-sialyltransferase 8D (Siat8D)                      | <i>Pan troglodytes</i>                        | n.d.     | AJ697661                        | <b>CAG26899.1</b>  |           |          |
| $\alpha$ -2,8-sialyltransferase                                  | <i>Pan troglodytes</i>                        | n.d.     | AJ697662                        | <b>CAG26900.1</b>  |           |          |

FIGURE 91

| Protein  | Organism                          | EC#      | GenBank / GenPept               |   | SwissProt        | PDB / 3D |
|--|-----------------------------------|----------|---------------------------------|---|------------------|----------|
| 8E (Siat8E)  |                                   |          |                                 |   |                  |          |
| $\alpha$ -2,8-sialyltransferase<br>8F (Siat8F)                             | <i>Pan troglodytes</i>            | n.d.     | AJ697663                        | CAG26901.1                              |                  |          |
| $\beta$ -galactosamide $\alpha$ -2,6-sialyltransferase I (ST6Gal I; Siat1) | <i>Pan troglodytes</i>            | 2.4.99.1 | AJ627624                        | CAF29492.1                              |                  |          |
| $\beta$ -galactosamide $\alpha$ -2,6-sialyltransferase II (ST6Gal II)      | <i>Pan troglodytes</i>            | n.d.     | AJ627625                        | CAF29493.1                              |                  |          |
| GM3 synthase ST3Gal V (Siat9)  | <i>Pan troglodytes</i>            | n.d.     | AJ744807                        | CAG32843.1                              |                  |          |
| S138L  | <i>Rabbit fibroma virus Kasza</i> | n.d.     | NC_001266                       | NP_052025                               |                  |          |
| $\alpha$ -2,3-sialyltransferase ST3Gal III                                 | <i>Rattus norvegicus</i>          | 2.4.99.6 | M97754<br>NM_031697             | AAA42146.1<br>NP_113885.1               | Q02734           |          |
| $\alpha$ -2,3-sialyltransferase ST3Gal IV (Siat4c)                         | <i>Rattus norvegicus</i>          | n.d.     | AJ626825                        | CAF25183.1                              |                  |          |
| $\alpha$ -2,3-sialyltransferase ST3Gal VI                                  | <i>Rattus norvegicus</i>          | n.d.     | AJ626743                        | CAF25053.1                              |                  |          |
| $\alpha$ -2,6-sialyltransferase ST3Gal II                                  | <i>Rattus norvegicus</i>          | 2.4.99.- | X76988<br>NM_031695             | CAA54293.1<br>NP_113883.1               | Q11205           |          |
| $\alpha$ -2,6-sialyltransferase ST6Gal I                                   | <i>Rattus norvegicus</i>          | 2.4.99.1 | M18769<br>M83143                | AAA41196.1<br>AAB07233.1                | P13721           |          |
| $\alpha$ -2,6-sialyltransferase ST6GalNAc I (Siat7A)                       | <i>Rattus norvegicus</i>          | n.d.     | AJ634458                        | CAG25684.1                              |                  |          |
| $\alpha$ -2,6-sialyltransferase ST6GalNAc II (Siat7B)                      | <i>Rattus norvegicus</i>          | n.d.     | AJ634457                        | CAG25679.1                              |                  |          |
| $\alpha$ -2,6-sialyltransferase ST6GalNAc III                              | <i>Rattus norvegicus</i>          | 2.4.99.- | L29554<br>BC072501<br>NM_019123 | AAC42086.1<br>AAH72501.1<br>NP_061996.1 | Q64686           |          |
| $\alpha$ -2,6-sialyltransferase ST6GalNAc IV (Siat7D) (fragment)           | <i>Rattus norvegicus</i>          | n.d.     | AJ646871                        | CAG26700.1                              |                  |          |
| $\alpha$ -2,6-sialyltransferase ST6GalNAc V (Siat7E)                       | <i>Rattus norvegicus</i>          | n.d.     | AJ646872                        | CAG26701.1                              |                  |          |
| $\alpha$ -2,6-sialyltransferase ST6GalNAc VI (Siat7F) (fragment)           | <i>Rattus norvegicus</i>          | n.d.     | AJ646881                        | CAG26710.1                              |                  |          |
| $\alpha$ -2,8-sialyltransferase (GD3 synthase) ST8Sia I                    | <i>Rattus norvegicus</i>          | 2.4.99.- | U53883<br>D45255                | AAC27541.1<br>BAA08213.1                | P70554<br>P97713 |          |
| $\alpha$ -2,8-sialyltransferase (SIAT8E)                                   | <i>Rattus norvegicus</i>          | n.d.     | AJ699422                        | CAG27884.1                              |                  |          |
| $\alpha$ -2,8-sialyltransferase (SIAT8F)                                   | <i>Rattus norvegicus</i>          | n.d.     | AJ699423                        | CAG27885.1                              |                  |          |
| $\alpha$ -2,8-sialyltransferase ST8Sia II                                  | <i>Rattus norvegicus</i>          | 2.4.99.- | L13445<br>NM_057156             | AAA42147.1<br>NP_476497.1               | Q07977<br>Q64688 |          |
| $\alpha$ -2,8-sialyltransferase ST8Sia III                                 | <i>Rattus norvegicus</i>          | 2.4.99.- | U55938<br>NM_013029             | AAB50061.1<br>NP_037161.1               | P97877           |          |
| $\alpha$ -2,8-sialyltransferase ST8Sia IV                                  | <i>Rattus norvegicus</i>          | 2.4.99.- | U90215                          | AAB49989.1                              | O08563           |          |
| $\beta$ -galactosamide $\alpha$ -2,6-sialyltransferase II (ST6Gal II)      | <i>Rattus norvegicus</i>          | n.d.     | AJ627626                        | CAF29494.1                              |                  |          |
| GM3 synthase ST3Gal V  | <i>Rattus norvegicus</i>          | n.d.     | AB018049<br>NM_031337           | BAA33492.1<br>NP_112627.1               | O88830           |          |

FIGURE 9J

| Protein  | Organism                             | EC#      | GenBank / GenPept  |                                  | SwissProt     | PDB / 3D |
|--|--------------------------------------|----------|--------------------|----------------------------------|---------------|----------|
| sialyltransferase ST3Gal-I (Siat4A)                                  | <i>Rattus norvegicus</i>             | n.d.     | AJ748840           | <b>CAG44449.1</b>                |               |          |
| $\alpha$ -2,3-sialyltransferase (St3Gal-II)                          | <i>Silurana tropicalis</i>           | n.d.     | AJ585763           | <b>CAE51387.1</b>                |               |          |
| $\alpha$ -2,6-sialyltransferase (Siat7b)                             | <i>Silurana tropicalis</i>           | n.d.     | AJ620650           | <b>CAF05849.1</b>                |               |          |
| $\alpha$ -2,6-sialyltransferase (St6galnac)                          | <i>Strongylocentrotus purpuratus</i> | n.d.     | AJ699425           | <b>CAG27887.1</b>                |               |          |
| $\alpha$ -2,3-sialyltransferase (ST3GAL-III)                         | <i>Sus scrofa</i>                    | n.d.     | AJ585765           | <b>CAE51389.1</b>                |               |          |
| $\alpha$ -2,3-sialyltransferase (ST3GAL-IV)                          | <i>Sus scrofa</i>                    | n.d.     | AJ584674           | <b>CAE48299.1</b>                |               |          |
| $\alpha$ -2,3-sialyltransferase ST3Gal I                             | <i>Sus scrofa</i>                    | 2.4.99.4 | M97753             | <b>AAA31125.1</b>                | <b>Q02745</b> |          |
| $\alpha$ -2,6-sialyltransferase (fragment) ST6Gal I                  | <i>Sus scrofa</i>                    | 2.4.99.1 | AF136746           | <b>AAD33059.1</b>                | <b>Q9XSG8</b> |          |
| $\beta$ -galactosamide $\alpha$ -2,6-sialyltransferase (ST6GalNAc-V) | <i>Sus scrofa</i>                    | n.d.     | AJ620948           | <b>CAF06585.2</b>                |               |          |
| sialyltransferase (fragment) ST6Gal I                                | <i>Sus scrofa</i>                    | n.d.     | AF041031           | <b>AAC15633.1</b>                | <b>O62717</b> |          |
| ST6GALNAC-V  | <i>Sus scrofa</i>                    | n.d.     | AJ620948           | <b>CAF06585.1</b>                |               |          |
| $\alpha$ -2,3-sialyltransferase (Siat5-r)                            | <i>Takifugu rubripes</i>             | n.d.     | AJ744805           | <b>CAG32841.1</b>                |               |          |
| $\alpha$ -2,3-sialyltransferase ST3Gal I (Siat4)                     | <i>Takifugu rubripes</i>             | n.d.     | AJ626816           | <b>CAF25174.1</b>                |               |          |
| $\alpha$ -2,3-sialyltransferase ST3Gal II (Siat5) (fragment)         | <i>Takifugu rubripes</i>             | n.d.     | AJ626817           | <b>CAF25175.1</b>                |               |          |
| $\alpha$ -2,3-sialyltransferase ST3Gal III (Siat6)                   | <i>Takifugu rubripes</i>             | n.d.     | AJ626818           | <b>CAF25176.1</b>                |               |          |
| $\alpha$ -2,6-sialyltransferase ST6Gal I (Siat1)                     | <i>Takifugu rubripes</i>             | n.d.     | AJ744800           | <b>CAG32836.1</b>                |               |          |
| $\alpha$ -2,6-sialyltransferase ST6GalNAc II (Siat7B)                | <i>Takifugu rubripes</i>             | n.d.     | AJ634460           | <b>CAG25681.1</b>                |               |          |
| $\alpha$ -2,6-sialyltransferase ST6GalNAc II B (Siat7B-related)      | <i>Takifugu rubripes</i>             | n.d.     | AJ634461           | <b>CAG25682.1</b>                |               |          |
| $\alpha$ -2,6-sialyltransferase ST6GalNAc III (Siat7C) (fragment)    | <i>Takifugu rubripes</i>             | n.d.     | AJ634456           | <b>CAG25678.1</b>                |               |          |
| $\alpha$ -2,6-sialyltransferase ST6GalNAc IV (siat7D) (fragment)     | <i>Takifugu rubripes</i>             | 2.4.99.3 | Y17466<br>AJ646869 | <b>CAB44338.1<br/>CAG26698.1</b> | <b>Q9W6U6</b> |          |
| $\alpha$ -2,6-sialyltransferase ST6GalNAc V (Siat7E) (fragment)      | <i>Takifugu rubripes</i>             | n.d.     | AJ646873           | <b>CAG26702.1</b>                |               |          |
| $\alpha$ -2,6-sialyltransferase ST6GalNAc VI (Siat7F) (fragment)     | <i>Takifugu rubripes</i>             | n.d.     | AJ646880           | <b>CAG26709.1</b>                |               |          |
| $\alpha$ -2,8-sialyltransferase ST8Sia I (Siat 8A) (fragment)        | <i>Takifugu rubripes</i>             | n.d.     | AJ715534           | <b>CAG29373.1</b>                |               |          |
| $\alpha$ -2,8-sialyltransferase ST8Sia II (Siat 8B) (fragment)       | <i>Takifugu rubripes</i>             | n.d.     | AJ715538           | <b>CAG29377.1</b>                |               |          |
| $\alpha$ -2,8-sialyltransferase ST8Sia III (Siat 8C) (fragment)      | <i>Takifugu rubripes</i>             | n.d.     | AJ715541           | <b>CAG29380.1</b>                |               |          |
| $\alpha$ -2,8-sialyltransferase ST8Sia IIIr (Siat 8Cr)               | <i>Takifugu rubripes</i>             | n.d.     | AJ715542           | <b>CAG29381.1</b>                |               |          |
| $\alpha$ -2,8-sialyltransferase ST8Sia V (Siat 8E)                   | <i>Takifugu rubripes</i>             | n.d.     | AJ715547           | <b>CAG29386.1</b>                |               |          |

FIGURE 9K

| Protein   | Organism                      | EC#      | GenBank / GenPept                |   | SwissProt     | PDB / 3D |
|---|-------------------------------|----------|----------------------------------|---|---------------|----------|
| (fragment)  |                               |          |                                  |   |               |          |
| $\alpha$ -2,8-sialyltransferase ST8Sia VI (Siat 8F) (fragment)        | <i>Takifugu rubripes</i>      | n.d.     | AJ715549                         | <b>CAG29388.1</b>                             |               |          |
| $\alpha$ -2,8-sialyltransferase ST8Sia VIr (Siat 8Fr)                 | <i>Takifugu rubripes</i>      | n.d.     | AJ715550                         | <b>CAG29389.1</b>                             |               |          |
| $\alpha$ -2,3-sialyltransferase (Siat5-r)                             | <i>Tetraodon nigroviridis</i> | n.d.     | AJ744806                         | <b>CAG32842.1</b>                             |               |          |
| $\alpha$ -2,3-sialyltransferase ST3Gal I (Siat4)                      | <i>Tetraodon nigroviridis</i> | n.d.     | AJ744802                         | <b>CAG32838.1</b>                             |               |          |
| $\alpha$ -2,3-sialyltransferase ST3Gal III (Siat6)                    | <i>Tetraodon nigroviridis</i> | n.d.     | AJ626822                         | <b>CAF25180.1</b>                             |               |          |
| $\alpha$ -2,6-sialyltransferase ST6GalNAc II (Siat7B)                 | <i>Tetraodon nigroviridis</i> | n.d.     | AJ634462                         | <b>CAG25683.1</b>                             |               |          |
| $\alpha$ -2,6-sialyltransferase ST6GalNAc V (Siat7E) (fragment)       | <i>Tetraodon nigroviridis</i> | n.d.     | AJ646879                         | <b>CAG26708.1</b>                             |               |          |
| $\alpha$ -2,8-sialyltransferase ST8Sia I (Siat 8A) (fragment)         | <i>Tetraodon nigroviridis</i> | n.d.     | AJ715536                         | <b>CAG29375.1</b>                             |               |          |
| $\alpha$ -2,8-sialyltransferase ST8Sia II (Siat 8B) (fragment)        | <i>Tetraodon nigroviridis</i> | n.d.     | AJ715537                         | <b>CAG29376.1</b>                             |               |          |
| $\alpha$ -2,8-sialyltransferase ST8Sia III (Siat 8C) (fragment)       | <i>Tetraodon nigroviridis</i> | n.d.     | AJ715539                         | <b>CAG29378.1</b>                             |               |          |
| $\alpha$ -2,8-sialyltransferase ST8Sia IIIr (Siat 8Cr) (fragment)     | <i>Tetraodon nigroviridis</i> | n.d.     | AJ715540                         | <b>CAG29379.1</b>                             |               |          |
| $\alpha$ -2,8-sialyltransferase ST8Sia V (Siat 8E) (fragment)         | <i>Tetraodon nigroviridis</i> | n.d.     | AJ715548                         | <b>CAG29387.1</b>                             |               |          |
| $\alpha$ -2,3-sialyltransferase (St3Gal-II)                           | <i>Xenopus laevis</i>         | n.d.     | AJ585762                         | <b>CAE51386.1</b>                             |               |          |
| $\alpha$ -2,3-sialyltransferase (St3Gal-VI)                           | <i>Xenopus laevis</i>         | n.d.     | AJ585766                         | <b>CAE51390.1</b>                             |               |          |
| $\alpha$ -2,3-sialyltransferase St3Gal-III (Siat6)                    | <i>Xenopus laevis</i>         | n.d.     | AJ585764<br>AJ626823             | <b>CAE51388.1</b><br><b>CAF25181.1</b>        |               |          |
| $\alpha$ -2,8-polysialyltransferase                                   | <i>Xenopus laevis</i>         | 2.4.99.- | AB007468                         | BAA32617.1                                    | <b>O93234</b> |          |
| $\alpha$ -2,8-sialyltransferase ST8Sia-I (Siat8A;GD3 synthase)        | <i>Xenopus laevis</i>         | n.d.     | AY272056<br>AY272057<br>AJ704562 | AAQ16162.1<br>AAQ16163.1<br><b>CAG28695.1</b> |               |          |
| Unknown (protein for MGC:81265)                                       | <i>Xenopus laevis</i>         | n.d.     | BC068760                         | <b>AAH68760.1</b>                             |               |          |
| $\alpha$ -2,3-sialyltransferase (3Gal-VI)                             | <i>Xenopus tropicalis</i>     | n.d.     | AJ626744                         | <b>CAF25054.1</b>                             |               |          |
| $\alpha$ -2,3-sialyltransferase (Siat4c)                              | <i>Xenopus tropicalis</i>     | n.d.     | AJ622908                         | <b>CAF22058.1</b>                             |               |          |
| $\alpha$ -2,6-sialyltransferase ST6GalNAc V (Siat7E) (fragment)       | <i>Xenopus tropicalis</i>     | n.d.     | AJ646878                         | <b>CAG26707.1</b>                             |               |          |
| $\alpha$ -2,8-sialyltransferase ST8Sia III (Siat 8C) (fragment)       | <i>Xenopus tropicalis</i>     | n.d.     | AJ715544                         | <b>CAG29383.1</b>                             |               |          |
| $\beta$ -galactosamide $\alpha$ -2,6-sialyltransferase II (ST6Gal II) | <i>Xenopus tropicalis</i>     | n.d.     | AJ627628                         | <b>CAF29496.1</b>                             |               |          |
| sialyltransferase St8Sial   | <i>Xenopus tropicalis</i>     | n.d.     | AY652775                         | <b>AAT67042</b>                               |               |          |
| poly- $\alpha$ -2,8-sialosyl sialyltransferase (NeuS)                 | <i>Escherichia coli K1</i>    | 2.4.--   | M76370<br>X60598                 | AAA24213.1<br>CAA43053.1                      | <b>Q57269</b> |          |
| polysialyltransferase   | <i>Escherichia coli K92</i>   | 2.4.--   | M88479                           | <b>AAA24215.1</b>                             | Q47404        |          |

FIGURE 9L

| Protein                                   | Organism                                      | EC#      | GenBank / GenPept               |   | SwissProt        | PDB / 3D |
|---|---|----------|---------------------------------|---|------------------|----------|
| $\alpha$ -2,8 polysialyltransferase SiaD  | <i>Neisseria meningitidis</i> B1940           | 2.4.-.-  | M95053<br>X78068                | AAA20478.1<br>CAA54985.1                | Q51281<br>Q51145 |          |
| SynE                                      | <i>Neisseria meningitidis</i> FAM18           | n.d.     | U75650                          | AAB53842.1                              | O06435           |          |
| polysialyltransferase (SiaD)(fragment)    | <i>Neisseria meningitidis</i> M1019           | n.d.     | AY234192                        | AAO85290.1                              |                  |          |
| SiaD (fragment)                           | <i>Neisseria meningitidis</i> M209            | n.d.     | AY281046                        | AAP34769.1                              |                  |          |
| SiaD (fragment)                           | <i>Neisseria meningitidis</i> M3045           | n.d.     | AY281044                        | AAP34767.1                              |                  |          |
| polysialyltransferase (SiaD)(fragment)    | <i>Neisseria meningitidis</i> M3315           | n.d.     | AY234191                        | AAO85289.1                              |                  |          |
| SiaD (fragment)                           | <i>Neisseria meningitidis</i> M3515           | n.d.     | AY281047                        | AAP34770.1                              |                  |          |
| polysialyltransferase (SiaD)(fragment)    | <i>Neisseria meningitidis</i> M4211           | n.d.     | AY234190                        | AAO85288.1                              |                  |          |
| SiaD (fragment)                           | <i>Neisseria meningitidis</i> M4642           | n.d.     | AY281048                        | AAP34771.1                              |                  |          |
| polysialyltransferase (SiaD)(fragment)    | <i>Neisseria meningitidis</i> M5177           | n.d.     | AY234193                        | AAO85291.1                              |                  |          |
| SiaD                                      | <i>Neisseria meningitidis</i> M5178           | n.d.     | AY281043                        | AAP34766.1                              |                  |          |
| SiaD (fragment)                           | <i>Neisseria meningitidis</i> M980            | n.d.     | AY281045                        | AAP34768.1                              |                  |          |
| NMB0067                                   | <i>Neisseria meningitidis</i> MC58            | n.d.     | NC_003112                       | NP_273131                               |                  |          |
| Lst                                       | <i>Aeromonas punctata</i> Sch3                | n.d.     | AF126256                        | AAS66624.1                              |                  |          |
| ORF2                                      | <i>Haemophilus influenzae</i> A2              | n.d.     | M94855                          | AAA24979.1                              |                  |          |
| HI1699                                    | <i>Haemophilus influenzae</i> Rd              | n.d.     | U32842<br>NC_000907             | AAC23345.1<br>NP_439841.1               | Q48211           |          |
| $\alpha$ -2,3-sialyltransferase           | <i>Neisseria gonorrhoeae</i> F62              | 2.4.99.4 | U60664                          | AAC44539.1<br>AAE67205.1                | P72074           |          |
| $\alpha$ -2,3-sialyltransferase           | <i>Neisseria meningitidis</i> 126E, NRCC 4010 | 2.4.99.4 | U60662                          | AAC44544.2                              |                  |          |
| $\alpha$ -2,3-sialyltransferase           | <i>Neisseria meningitidis</i> 406Y, NRCC 4030 | 2.4.99.4 | U60661                          | AAC44543.1                              |                  |          |
| $\alpha$ -2,3-sialyltransferase (NMB0922) | <i>Neisseria meningitidis</i> MC58            | 2.4.99.4 | U60660<br>AE002443<br>NC_003112 | AAC44541.1<br>AAF41330.1<br>NP_273962.1 | P72097           |          |
| NMA1118                                   | <i>Neisseria meningitidis</i> Z2491           | n.d.     | AL162755<br>NC_003116           | CAB84380.1<br>NP_283887.1               | Q9JUV5           |          |
| PM0508                                    | <i>Pasteurella multocida</i> PM70             | n.d.     | AE006086<br>NC_002663           | AAK02592.1<br>NP_245445.1               | Q9CNC4           |          |
| WaaH                                      | <i>Salmonella enterica</i> SARB25             | n.d.     | AF519787                        | AAM82550.1                              | Q8KS93           |          |
| WaaH                                      | <i>Salmonella enterica</i> SARB3              | n.d.     | AF519788                        | AAM82551.1                              | Q8KS92           |          |
| WaaH                                      | <i>Salmonella enterica</i> SARB39             | n.d.     | AF519789                        | AAM82552.1                              |                  |          |
| WaaH                                      | <i>Salmonella enterica</i> SARB53             | n.d.     | AF519790                        | AAM82553.1                              |                  |          |
| WaaH                                      | <i>Salmonella enterica</i> SARB57             | n.d.     | AF519791                        | AAM82554.1                              | Q8KS91           |          |
| WaaH                                      | <i>Salmonella enterica</i> SARB71             | n.d.     | AF519793                        | AAM82556.1                              | Q8KS89           |          |
| WaaH                                      | <i>Salmonella enterica</i>                    | n.d.     | AF519792                        | AAM82555.1                              | Q8KS90           |          |

FIGURE 9M

| Protein  | Organism  | EC#      | GenBank / GenPept     |                           | SwissProt | PDB / 3D |
|--|---|----------|-----------------------|---------------------------|-----------|----------|
|  | SARB8   |          |                       |                           |           |          |
| WaaH   | <i>Salmonella enterica</i> SARC10V                        | n.d.     | AF519779              | AAM88840.1                | Q8KS99    |          |
| WaaH (fragment)  | <i>Salmonella enterica</i> SARC12                         | n.d.     | AF519781              | AAM88842.1                |           |          |
| WaaH (fragment)  | <i>Salmonella enterica</i> SARC13I                        | n.d.     | AF519782              | AAM88843.1                | Q8KS98    |          |
| WaaH (fragment)  | <i>Salmonella enterica</i> SARC14I                        | n.d.     | AF519783              | AAM88844.1                | Q8KS97    |          |
| WaaH   | <i>Salmonella enterica</i> SARC15II                       | n.d.     | AF519784              | AAM88845.1                | Q8KS96    |          |
| WaaH   | <i>Salmonella enterica</i> SARC16II                       | n.d.     | AF519785              | AAM88846.1                | Q8KS95    |          |
| WaaH (fragment)  | <i>Salmonella enterica</i> SARC3I                         | n.d.     | AF519772              | AAM88834.1                | Q8KSA4    |          |
| WaaH (fragment)  | <i>Salmonella enterica</i> SARC4I                         | n.d.     | AF519773              | AAM88835.1                | Q8KSA3    |          |
| WaaH   | <i>Salmonella enterica</i> SARC5IIa                       | n.d.     | AF519774              | AAM88836.1                |           |          |
| WaaH   | <i>Salmonella enterica</i> SARC6IIa                       | n.d.     | AF519775              | AAM88837.1                | Q8KSA2    |          |
| WaaH   | <i>Salmonella enterica</i> SARC8                          | n.d.     | AF519777              | AAM88838.1                | Q8KSA1    |          |
| WaaH   | <i>Salmonella enterica</i> SARC9V                         | n.d.     | AF519778              | AAM88839.1                | Q8KSA0    |          |
| UDP-glucose : $\alpha$ -1,2-glucosyltransferase (WaaH)     | <i>Salmonella enterica</i> subsp. <i>arizonaee</i> SARC 5 | 2.4.1.-  | AF511116              | AAM48166.1                |           |          |
| bifunctional $\alpha$ -2,3/-2,8-sialyltransferase (Cst-II) | <i>Campylobacter jejuni</i> ATCC 43449                    | n.d.     | AF401529              | AAL06004.1                | Q93CZ5    |          |
| Cst  | <i>Campylobacter jejuni</i> 81-176                        | n.d.     | AF305571              | AAL09368.1                |           |          |
| $\alpha$ -2,3-sialyltransferase (Cst-III)                  | <i>Campylobacter jejuni</i> ATCC 43429                    | 2.4.99.- | AY044156              | AAK73183.1                |           |          |
| $\alpha$ -2,3-sialyltransferase (Cst-III)                  | <i>Campylobacter jejuni</i> ATCC 43430                    | 2.4.99.- | AF400047              | AAK85419.1                |           |          |
| $\alpha$ -2,3-sialyltransferase (Cst-II)                   | <i>Campylobacter jejuni</i> ATCC 43432                    | 2.4.99.- | AF215659              | AAG43979.1                | Q9F0M9    |          |
| $\alpha$ -2,3/8-sialyltransferase (CstII)                  | <i>Campylobacter jejuni</i> ATCC 43438                    | n.d.     | AF400048              | AAK91725.1                | Q93MQ0    |          |
| $\alpha$ -2,3-sialyltransferase cst-II                     | <i>Campylobacter jejuni</i> ATCC 43446                    | 2.4.99.- | AF167344              | AAF34137.1                |           |          |
| $\alpha$ -2,3-sialyltransferase (Cst-II)                   | <i>Campylobacter jejuni</i> ATCC 43456                    | 2.4.99.- | AF401528              | AAL05990.1                | Q93D05    |          |
| $\alpha$ -2,3-/ $\alpha$ -2,8-sialyltransferase (CstII)    | <i>Campylobacter jejuni</i> ATCC 43460                    | 2.4.99.- | AY044868              | AAK96001.1                | Q938X6    |          |
| $\alpha$ -2,3/8-sialyltransferase (Cst-II)                 | <i>Campylobacter jejuni</i> ATCC 700297                   | n.d.     | AF216647              | AAL36462.1                |           |          |
| ORF  | <i>Campylobacter jejuni</i> GB11                          | n.d.     | AY422197              | AAR82875.1                |           |          |
| $\alpha$ -2,3-sialyltransferase cstIII                     | <i>Campylobacter jejuni</i> MSC57360                      | 2.4.99.- | AF195055              | AAG29922.1                |           |          |
| $\alpha$ -2,3-sialyltransferase cstIII Cj1140              | <i>Campylobacter jejuni</i> NCTC 11168                    | 2.4.99.- | AL139077<br>NC_002163 | CAB73395.1<br>NP_282288.1 | Q9PNF4    |          |
| $\alpha$ -2,3/ $\alpha$ -2,8-sialyltransferase II (cstII)  | <i>Campylobacter jejuni</i> O:10                          | n.d.     | -<br>AX934427         | AAO96669.1<br>CAF04167.1  |           |          |
| $\alpha$ -2,3/ $\alpha$ -2,8-sialyltransferase II (CstII)  | <i>Campylobacter jejuni</i> O:19                          | n.d.     | AX934431              | CAF04169.1                |           |          |
| $\alpha$ -2,3/ $\alpha$ -2,8-sialyltransferase II (CstII)  | <i>Campylobacter jejuni</i> O:36                          | n.d.     | AX934436              | CAF04171.1                |           |          |
| $\alpha$ -2,3/ $\alpha$ -2,8-                              | <i>Campylobacter</i>                                      | n.d.     | AX934434              | CAF04170.1                |           |          |

**FIGURE 9N**

| Protein  | Organism                           | EC#      | GenBank / GenPept             |   | SwissProt    | PDB / 3D |
|--|------------------------------------|----------|-------------------------------|---|--------------|----------|
| sialyltransferase II (CstII)                               | <i>jejuni</i> O:4                  |          |                               |   |              |          |
| $\alpha$ -2,3/ $\alpha$ -2,8-sialyltransferase II (CstII)  | <i>Campylobacter jejuni</i> O:41   | n.d.     | -<br>-<br>AX934429            | AAO96670.1<br>AAT17967.1<br><b>CAF04168.1</b> |              |          |
| $\alpha$ -2,3-sialyltransferase cst-I                      | <i>Campylobacter jejuni</i> OH4384 | 2.4.99.- | AF130466<br>-                 | <b>AAF13495.1</b><br>AAS36261.1               | Q9RGF1       |          |
| bifunctional $\alpha$ -2,3/-2,8-sialyltransferase (Cst-II) | <i>Campylobacter jejuni</i> OH4384 | 2.4.99.- | AF130984<br>AX934425          | <b>AAF31771.1</b><br>CAF04166.1               | 1R07<br>1R08 | C<br>A   |
| HI0352 (fragment)  | <i>Haemophilus influenzae</i> Rd   | n.d.     | U32720<br>X57315<br>NC_000907 | AAC22013.1<br>CAA40567.1<br>NP_438516.1       | P24324       |          |
| PM1174   | <i>Pasteurella multocida</i> PM70  | n.d.     | AE006157<br>NC_002663         | <b>AAK03258.1</b><br>NP_246111.1              | Q9CLP3       |          |
| Sequence 10 from patent US 6503744                         | Unknown.                           | n.d.     | -                             | <b>AAO96672.1</b>                             |              |          |
| Sequence 10 from patent US 6699705                         | Unknown.                           | n.d.     | -                             | <b>AAT17969.1</b>                             |              |          |
| Sequence 12 from patent US 6699705                         | Unknown.                           | n.d.     | -                             | <b>AAT17970.1</b>                             |              |          |
| Sequence 2 from patent US 6709834                          | Unknown.                           | n.d.     | -                             | <b>AAT23232.1</b>                             |              |          |
| Sequence 3 from patent US 6503744                          | Unknown.                           | n.d.     | -                             | <b>AAO96668.1</b>                             |              |          |
| Sequence 3 from patent US 6699705                          | Unknown.                           | n.d.     | -                             | <b>AAT17965.1</b>                             |              |          |
| Sequence 34 from patent US 6503744                         | Unknown.                           | n.d.     | -                             | <b>AAO96684.1</b>                             |              |          |
| Sequence 35 from patent US 6503744 (fragment)              | Unknown.                           | n.d.     | -<br>-                        | <b>AAO96685.1</b><br>AAS36262.1               |              |          |
| Sequence 48 from patent US 6699705                         | Unknown.                           | n.d.     | -                             | <b>AAT17988.1</b>                             |              |          |
| Sequence 5 from patent US 6699705                          | Unknown.                           | n.d.     | -                             | <b>AAT17966.1</b>                             |              |          |
| Sequence 9 from patent US 6503744                          | Unknown.                           | n.d.     | -                             | <b>AAO96671.1</b>                             |              |          |